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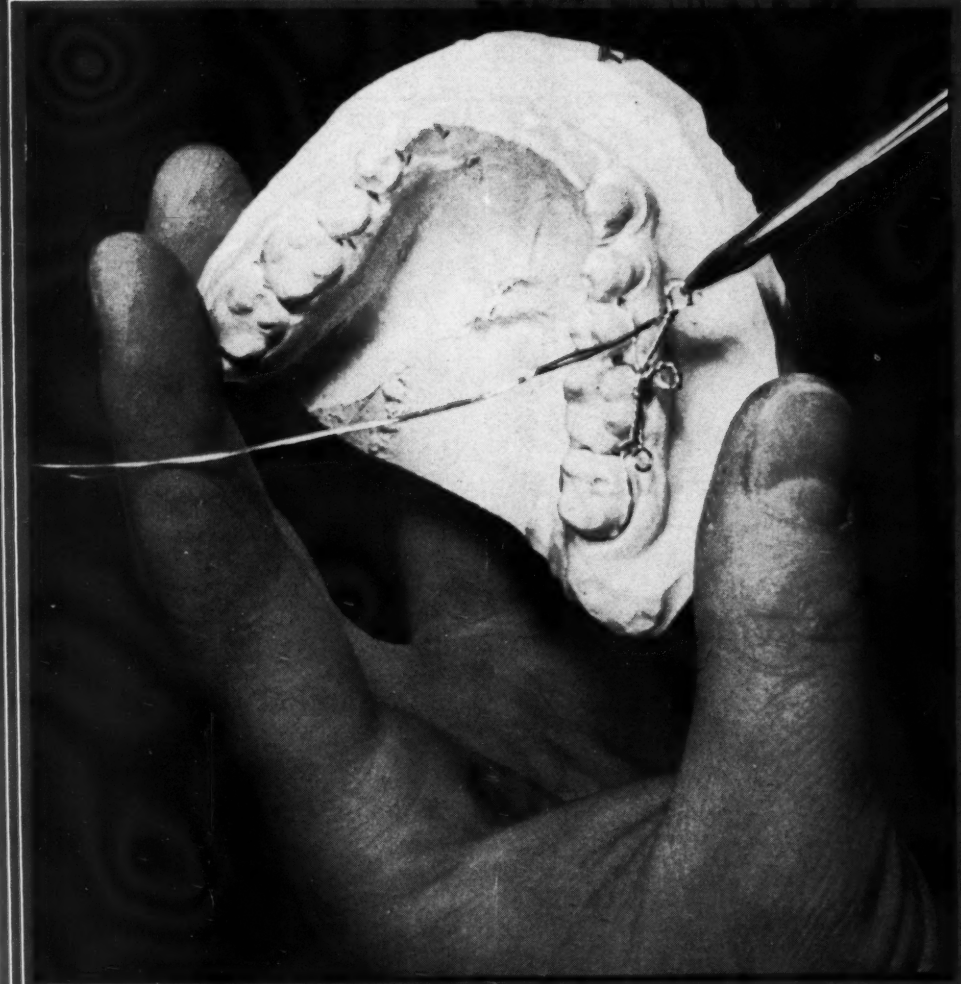
D E N T A L

Digest

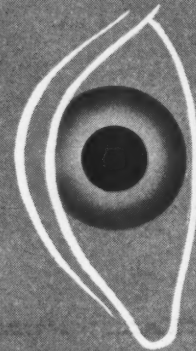
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SYSTEM OF TOOTH COLOR SELECTION

THE DENTAL Digest

VOL. 52

NO. 5

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EDWARD J. RYAN, B.S., D.D.S., *Editor*

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BURTON STODEL, at present a Captain in the Army Dental Corps, received his D.D.S. from the New York College of Dentistry in 1943. Captain Stodel's presentation is THE ACRYLIC-AMALGAM LINK: A RESTORATION FOR ANTERIOR TEETH.

EDWARD O. SHANER, B.S., D.D.S. (Western Reserve University, School of Dentistry, 1943) practices general dentistry. Doctor Shaner, who has published frequently in the dental literature, writes for us on PENICILLIN THERAPY IN DENTAL PRACTICE.

CHARLES H. MOSES, D.D.S., L.D.S. (Uni-

versity of Toronto, Faculty of Medicine, 1924) emphasizes prosthodontics in his practice. In March Doctor Moses presented the factors that influence the retention of dentures. This month he brings us the second (concluding) installment of A CONTROLLABLE, CORRECTABLE, AND PHYSIOLOGICALLY TOLERABLE IMPRESSION TECHNIQUE.

GABRIEL WEISS, D.D.S. (The Thomas W. Evans Dental Institute, University of Pennsylvania, 1941) is a general practitioner. Doctor Weiss reports a case of MOUTH REHABILITATION AND RESTORATION OF THE VERTICAL DIMENSION.

WILLIAM I. OGUS, D.D.S. (George Washington University, 1917) is director of a postgraduate school on electrosurgical techniques for dentistry. Last month Doctor Ogus wrote on the electrosurgical treatment of the root canal. In this issue he discusses the use of the desiccating current in treating buccal gingival caries.

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MAY, 1946

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UNIVERSAL DENTAL COMPANY - 401 N. BROWN STREET - PHILA. 39, PA.

The Acrylic-Amalgam Link: A Restoration for Anterior Teeth

Captain BURTON STODEL (DC) USA, New York

This is the presentation of a technique for restoring anterior teeth by a combination of an acrylic inlay and amalgam. The resultant restoration is both functionally satisfactory and esthetically pleasing.

THE DENTAL Corps in the Army has done a heroic job in restoring servicemen's teeth to useful function. The volume of work is so great that dental clinics are taxed to capacity. In the course of their operative procedures, the dentists turn out amalgam restorations in all classes of cavities. From the standpoint of both time and cost, and, as a result of this enforced use of the material, we have come to recognize and admire its superior qualities. Despite the fact that we have often, under field conditions, had to improvise with materials and equipment we would have spurned in civilian life, the dental health of the Army is due in great part to the use of amalgam.

There are, however, cases in which amalgam is not desirable. The anterior teeth, the esthetics of which is a matter of great concern to most people, would be distinctly disfigured by the introduction of restorations characterized by metallic gray or black areas. As a consequence, silicate is employed in class III cavities. The class IV cavity, the mesio-incisal, disto-incisal, and incisal edge involvements, have no simple satisfactory restoration provided for them. While it is true that acrylic has been used for this purpose, we recognize that it has many serious shortcomings. It has sufficient edge strength and crushing strength to resist the torsion and pressure of occlusion and incision, and, at the same time, it harmonizes properly with the tooth color; how-

ever, its retentive qualities are inadequate. Warpage, marginal infidelity, and the lack of adhesion of cement, also make it undesirable.

Theory of Acrylic-Amalgam Link

In civilian practice the usual method of overcoming these difficulties is to construct a gold inlay with an acrylic corner; the acrylic replaces all the visible gold. It is not always convenient to do this under Army conditions. The process is laborious, time-consuming, and expensive, but it does have the merit of producing gratifying results.

When confronted with a case of this type, it occurred to me that a much more satisfactory and efficient restoration could be achieved by combining acrylic with amalgam. This could be accomplished, I felt, by fabricating for the labial surface of the tooth an acrylic inlay in which wires have been embedded. These

wires in turn extend into a lingual excavation in which amalgam can be packed around them. By such a procedure the advantages of both materials could be secured while minimizing their respective limitations.

I was definitely inspired and influenced by the gold inlay with the acrylic corner. I was familiar with its advantages and at once conceived of the greater possibilities to be gained by the use of amalgam. The initial step of tooth preparation would be far simpler, a characteristic of amalgam preparations as compared with gold, because in such restorations, unlike in gold inlays, some undercuts are not only permissible but valuable for added retention. Any restoration extending from the labial to the lingual of a tooth would thus have retentive potentialities that would make dislodgment virtually impossible.

There is also the consideration that the margin, to which the inlay must necessarily be fitted, would always be accessible, relatively short in length, and located in a cleanable area; the remainder of the margin would be sealed by the amalgam restoration. These factors are all of paramount importance, but it is likewise well to add that such a restoration would require less laboratory technique for construction, less expensive material, and less chair time.

Silicate may be a simple material to manipulate but we are well aware of its shortcomings. While at insertion it may match the shade of the tooth fairly well and fit the margins adequately, before too much time has elapsed it frequently stains and washes out at the margins. On the other hand, much more permanence would result from the acrylic-amalgam restoration.



Fig. 1—Initial tooth preparation with labial direction for withdrawal of impression for an acrylic-amalgam restoration of a class III cavity.

Technique

Indications—It has been stated that the acrylic-amalgam combination is particularly well adapted to mesio-incisal, disto-incisal, or incisal tip involvement of anterior teeth. These are

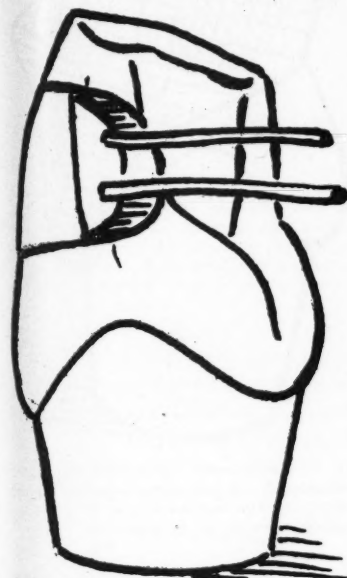


Fig. 2—Acrylic inlay (class III cavity) with two wires protruding lingually, prior to cutting the lingual lock and bending the wires.

the places for which it is unequivocally intended, but there is no doubt that it may be considered superior to silicate in restoring class III areas when both the labial and lingual walls have been involved, or where silicates have disintegrated and been replaced so often that the patients request a more permanent restoration.

Often the silicate material does not match well at the beginning, and as time goes on it becomes more and more inharmonious as the material discolors and disintegrates. The acrylic-amalgam restoration does not have this disadvantage.

Initial Tooth Preparation—The preparation of the tooth can best be

performed in two stages, provided the end result is well visualized beforehand. The final steps of the preparation are done after the completed inlay is brought to the mouth.

1. The necessary initial step is to excavate all caries from the cavity. This is accomplished at the expense of the labial wall which can, at the same time, be reduced to produce the desired outline and retention forms.

2. A straight chisel or stones and burs can be used to remove the necessary amount of labial enamel required to produce a smooth contour and a butt joint with the acrylic. Beveling of the enamel rods should be at a minimum inasmuch as that would produce a greater visible cement line and, perhaps, curling of the acrylic margins. Unsupported enamel rods should be removed inasmuch as they may later tend to crumble or discolor.

3. In this first stage a simple direction of withdrawal should be observed so that the impression can be removed toward the labial without dragging over undercuts. If any such undercuts appear as a result of the excavation, they can be eliminated temporarily with compound.

4. The preparation will now appear merely as a tapering hole extending along the edge of the tooth (Figs. 1, 5, and 6). The exception, of course, is the incisal tip restoration.

Impression Technique—1. Inasmuch as the tapers of the class III and class IV cavities are such that the lines of withdrawal are unhindered labially, it is simple to press warmed cones of compound into them, being careful that they do not extend beyond the lingual wall. A finger, slightly lubricated, can be held on the lingual of the teeth so that the compound bulges slightly into the cavity and limits the extent of the impression, preventing it from locking and dragging (Fig. 7). (The incisal edge impression is taken in an incisogingival direction with only enough of the tooth to guide in contouring the inlay pattern).

2. When the impressions are chilled and removed, the lingual surface is trimmed with a sharp instrument.

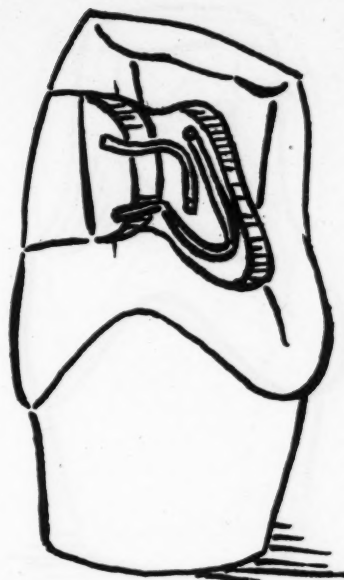


Fig. 3—Inlay in place after cutting the lingual lock and bending the wires into the lingual lock preparation.



Fig. 4—Finished restoration of a class III cavity: Inlay cemented in place and amalgam plugged around wires in lingual lock preparation.



Fig. 5—Initial tooth preparation with labial direction for withdrawal of impression (lingual view) for restoration of a class IV cavity.

This is done so that when replaced on the tooth it appears as a table a millimeter or two short of the lingual end of the cavity. This space will be part of the area later to be occupied by amalgam (Fig. 8).

3. The shade can now be selected,

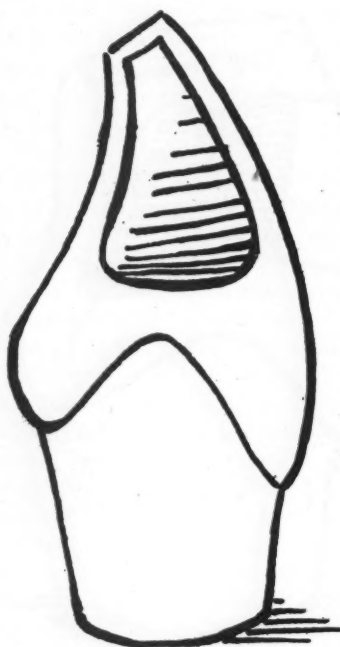


Fig. 6—Proximal view of a class IV cavity preparation ready for taking the impression.

and the patient given a re-appointment and dismissed.

Making the Inlay—1. The impression can now be used to pour a stone die. The die will represent the mold of the inlay minus the wire.

2. The wire is arranged for embedding by bending it into an elongated U shape. To place it for embedding, two holes are drilled in the stone die with a 700 L bur and the long ends of the U inserted therein with the bend bulging slightly into the mold (Fig. 9). It would be advantageous to coat the die with separator such as waterglass or some other suitable preparation before inserting the wire. The wire may be coated with opaque acrylic if there is any danger of it showing through an inlay of translucent shade. The wire should be placed in the holes and the inlay quickly waxed up and processed directly on the die.

3. In this manner the inlay will appear with two wires protruding lingually, and will be ready for insertion on removal from the investment (Figs. 2 and 10).

4. When the inlay is complete and brought to the mouth, the final steps of preparation can be performed:

a) The inlay is placed in the tooth with the wires protruding toward the lingual. These wires will indicate the area where the lingual lock must be cut because they will be bent into the recess so formed.

b) The lingual lock should be cut according to the best principles involved in this type of procedure. It should be placed as near the incisal edge of the tooth as is practicable; it should be dovetailed in outline for greater retention.

c) Remembering that this part of the preparation is designed to receive amalgam, there is no necessity for considering the withdrawal of a pattern.

d) Undercuts that will not leave unsupported enamel rods are desirable because they contribute toward the anchorage of the restoration.

5. With the completion of the properly designed retention form on the lingual, the tooth is ready for restoration.

Completion of Restoration—The

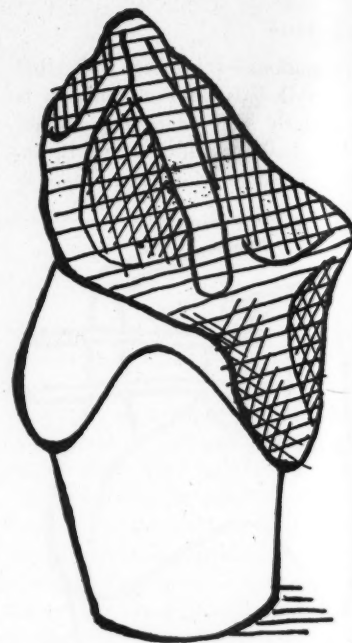


Fig. 7—Compound impression in place, prevented from extending beyond lingual margin by holding lubricated finger over lingual opening of preparation.

processes connected with completing the restoration are accomplished in three stages: cementing the inlay (Figs. 2 and 10), bending and fitting the wires into the lingual cavity (Figs.

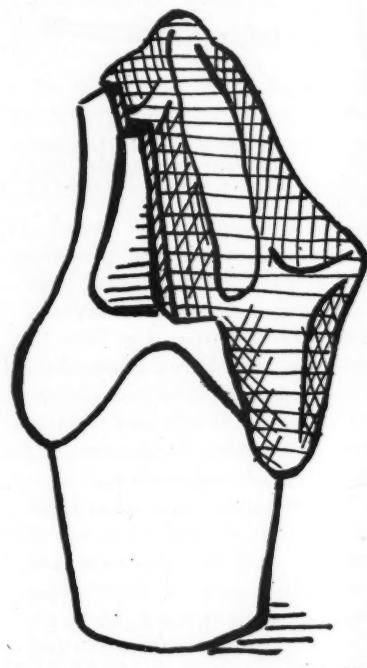


Fig. 8—Impression replaced on tooth after trimming away a millimeter or two from lingual to permit bending of wires at right angles into lingual lock.

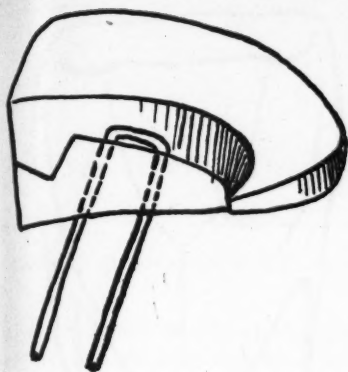


Fig. 9—Stone model poured from impression in Figure 8. Ends of U-shaped wire inserted into parallel labiolingual holes in stone. Bend in wire extends into mold sufficiently to grip acrylic well.

3 and 11), and, finally, plugging the amalgam over the wires (Figs. 4 and 12). They are not discrete stages, but each has a bearing on the next in a simple and logical way.

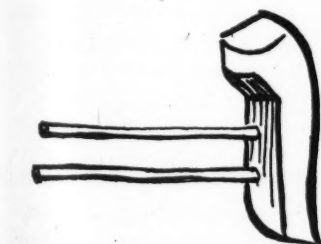
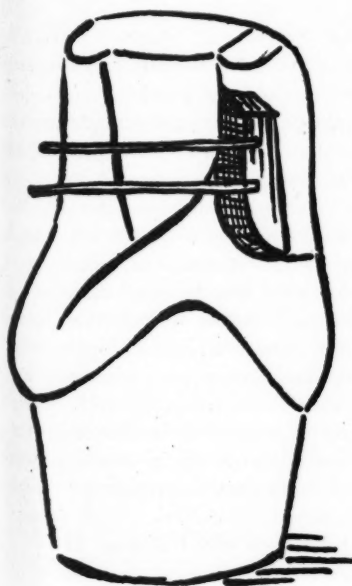


Fig. 10—Acrylic inlay (class IV cavity) with two wires protruding lingually.

1. Before cement is mixed for setting the inlay, the wires should be tried in the cavity, bent, clipped for size, and roughened slightly with a stone. They can then be straightened sufficiently to permit the inlay to be readily withdrawn and replaced so as not to prove embarrassing in the cementing procedure.

2. Before cementing the inlay in place, an important consideration should be borne in mind. The cement acts merely as a seal and temporary retainer; it is of little significance in the final retention of the acrylic. This gives us greater freedom in the choice of cement. Oxyphosphate, being opaque and inclined to render the cement line more conspicuous, can be replaced readily by silicate, or, better still, by kryptex which blends more perfectly with the tooth. Thus, while one may be inclined to be more cautious in choosing the medium to hold a more conventional inlay, the sole consideration in an acrylic-amalgam can be esthetics.

3. Now that the inlay has been seated accurately, the cement hardened, and the excess trimmed away with great care, the wires can be bent into their final position within the lingual cavity, and the amalgam can be plugged around them and properly condensed. It is advisable to use a copper or steel strip through the proximal and hold it labially as a matrix while plugging. The only factor that would render this step at all delicate is the excessive pressure on the acrylic which might, at this point, dislodge it. If the inlay is supported and the amalgam plugged with a vibratory motion, however, a remarkably well condensed restoration will result even if a great amount of pressure is not exerted on the plugger.

4. The patient should, of course, be instructed not to attempt to use the tooth for at least twenty-four hours, when the amalgam will have achieved its maximum hardness.

Variations in Technique

The technique that has been described here is an extremely general one. It is intended to apply to the average class III cavity or to a class IV cavity (Figs. 5-8). There are,



Fig. 11—Wires protruding from the inlay are bent and fitted into the lingual lock preparation.

necessarily, variations in the retention form applicable to irregular conditions such as the one in which the entire incisal edge must be restored. If there is no proximal involvement, this is perhaps the most difficult restoration to make without resorting to a jacket crown.

For years ceramists attempted it by baking porcelain tips with plati-

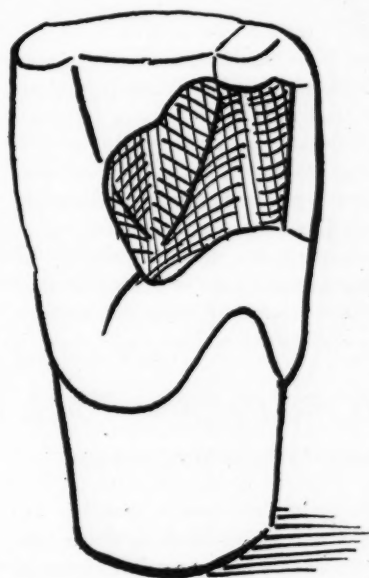


Fig. 12—Amalgam plugged into lingual lock preparation to cover wires. Finished restoration of a class IV cavity.

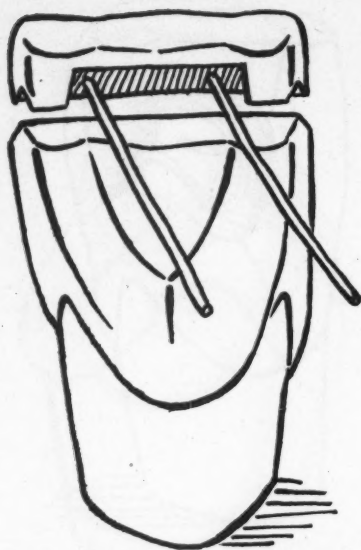


Fig. 13—Tooth prepared with gabled incisal bevel such that there is a slight obtuse angle where the bevels meet the labial and lingual surfaces. The inlay is shown ready for trial insertion.

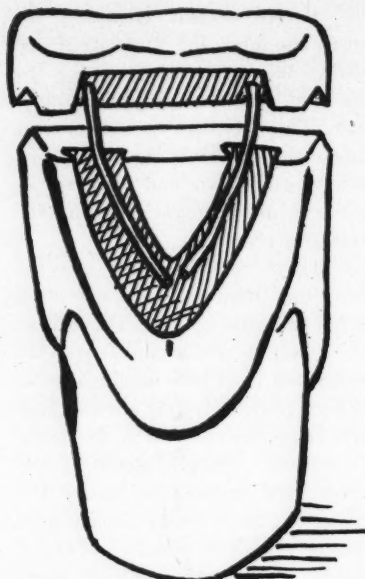


Fig. 14—Lingual preparation of same tooth, showing bending of wires. (Where not feasible to create triangular island in axial concavity of tooth, as in lateral incisors, it is advisable to make lock in region of lingual pit or cingulum.)

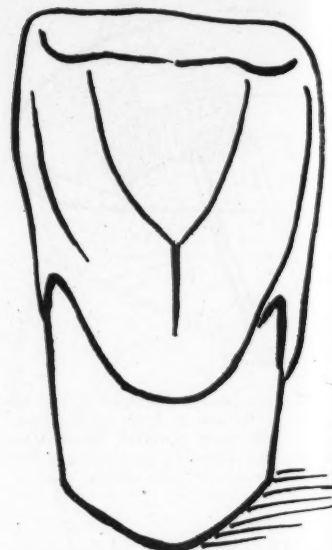


Fig. 15—Diagram of lingual anatomy of an incisor tooth illustrating the grooves demarcating the marginal ridges. Along these grooves undercuts may be created without undermining the enamel rods.

num pins. These pins are inserted into holes drilled parallel to the long axis of the tooth. The method did not prove satisfactory because the leverage at the incisal edge is too great. A solution to this problem is possible, particularly in the upper centrals, by the use of the acrylic-amalgam combination.

If we examine the anatomy of the upper incisor teeth in cross section, it will be noticed that the lingual aspect is shovel-shaped and consequently the enamel rods must assume a pattern particularly advantageous to our purpose. Inasmuch as the enamel surface presents lingually a concavity which is most acute in the region approaching the marginal ridges, the enamel rods must converge as they proceed outward from the dentino-enamel juncture. This would make it

possible to cut a channel with an inverted cone bur into this groove without appreciable undermining of the enamel. If, then, two such channels were cut, one in each groove of the lingual of the incisor tooth, they would converge on the cingulum and serve admirably to retain the wires extending from the incisal acrylic inlay (Figs. 13-15).

Conclusions

Essentially the acrylic-amalgam restoration is an adaptation of both materials in combination to satisfy the esthetic requirements of anterior teeth while supplying a firm, permanent, well sealed restoration. In two senses of the word, it is a "link:"

1. In its construction it is the linking by a wire of the two essential parts.

2. It is also an intermediate classification joining the broad categories: the tooth-like appearance and edge strength of the acrylic inlay, as well as the retention and marginal fit of the amalgam restoration.

The most vulnerable point of criticism is that the two parts are joined together by a strand of wire. It may be argued that the small diameter of the wire makes it a serious weak point. Concerning this I only need say that, during my preliminary experiments on extracted teeth, whenever I succeeded in breaking the restoration out of the cavity it was only with such force that the entire amalgam restoration as well as part of the tooth were fractured. The wire never broke nor showed signs of elongation.

1212 Fifth Avenue.

Is the Pulpless Tooth the Cause of Focal Infection?

MAX LEVY, D.M.D., London

BY FOCAL infection is generally understood an infection in which bacteria exist in circumscribed areas in certain tissues and from there are sent out into the blood stream. So long as the defense mechanism of the body is

intact, a remote infection from the teeth will not be apparent. In cases where disease or age have weakened the resistance of the body, however, infection from the teeth may lead to remote effects.

The Pulpless Tooth

1. Focal infection, with the exception of periodontitis, may be caused only by pulpless or infected teeth.

(Continued on page 288)

Penicillin Therapy in Dental Practice

EDWARD O. SHANER, D.D.S., Washington, D. C.

The physical and chemical properties of penicillin and its action in the body are discussed, as are the limitations of its use in treating oral conditions. The techniques of administration of penicillin in Vincent's stomatitis, alveolgia, periodontal disease, root canal therapy, and following apicoectomy are presented.

A WEALTH of new information has been gathered in the last year concerning the uses and action of penicillin. Much of the groundwork has resulted from observations and studies performed in the hospitals and clinics of the Army, Navy, and United States Public Health Service. To date, the data indicate that penicillin is a highly promising drug for the control of several oral infections. It should be thoroughly understood, however, that this potent antibiotic is not a miraculous one-shot treatment for abscessed teeth, infected gingivae, periodontoclasia, or root canal therapy. There are definite limitations to the use of penicillin, and, while it may produce excellent results in many cases, it will not compare to standard accepted procedures in others.

Physical and Chemical Properties

1. Penicillin is marketed as a highly refined powder varying in color from yellow to deep orange. It is readily soluble in water, acetone, and a number of other organic solvents.

2. The dry powder retains its potency for an indefinite time when stored at temperatures substantially below freezing. Solutions of penicillin deteriorate rapidly unless stored below 10° Centigrade (50° Fahrenheit), and even at this temperature, solutions over twenty-four hours old



Fig. 1—Acute Vincent's infection of the upper right quadrant. The tissue is edematous, and gingival border hemorrhagic and injected, and necrotic slough is present between the teeth. The patient complained of severe discomfort.

are not preferable for use; solutions over forty-eight hours old should be discarded.¹

3. Penicillin is stable in body fluids and exudates. It is not inactivated by pus. Most organisms resistant to this drug produce an enzyme, penicillinase, which is capable of inactivating penicillin.

4. The structure of penicillin is not known. Investigation has shown that it is a complex compound composed of oxygen, hydrogen, carbon, and probably nitrogen. It behaves as an organic acid and forms stable salts with sodium, calcium, barium, and ammonium. The sodium and calcium

salts are the most commonly used. Penicillin is incompatible with oxidizing agents, heavy metals, and primary alcohols. It is destroyed by the hydrochloric acid of the stomach, high temperatures, and alkalies. It seems to be unaffected by cold.

Action in Body

Penicillin has been described variously as a bacteriostatic agent, a bactericide, or both. It is generally conceded that its action in the body is that of a bacteriostat. Penicillin therapy retards or stops proliferation of susceptible bacteria to the point where the defense mechanisms of the body can overcome the invading organisms. In vitro, tests have shown that

¹Penicillin Pulletin, Eli Lilly and Company, Indianapolis.



Fig. 2—Cotton pellets packed into interproximal spaces on both labial and lingual. No scaling has been done. The cotton pellets are then well saturated with penicillin solution.

high concentrations of penicillin have some bactericidal effect on susceptible organisms.

Excretion from Body

Penicillin diffuses rapidly throughout the body when injected intravenously by continuous drip or intramuscularly. Some tissues such as synovial membranes, the choroid plexus, and the spinal cord are somewhat resistant to free diffusion of the drug. It has no renal threshold and is eliminated rapidly in the urine. Over 50 per cent of a single dose is excreted in one to two hours, and the remainder apparently is destroyed in the body.²

The incidence of toxic reactions to highly refined penicillin is extremely low. Transient urticaria and contact dermatitis sometimes occur. Pain at the site of injection varies with the purity of the product. Penicillin seems to have no effect on blood cells.²

Use in the Mouth

Penicillin therapy in the mouth

²Craig, W. M.; Thompson, G. J.; Hutter, A. M.; Barksdale, E. C.; Pfeiffer, C. C.; and Wolley, P. V., Jr.: Penicillin, A Progress Report. U. S. Naval Bull. 44:453-479 (March) 1945.

presents problems different from those encountered in clinical medicine. The preferable method of use is by topical application. Clinical studies on seventy-four patients have shown that an effective dose of penicillin given in the first eight hours was better than prolonged treatments with a series of lesser doses over a period of several days. Furthermore, some method of confining the penicillin to the site of the lesion was extremely beneficial. Studies were carried out in the following types of cases:

1. Vincent's stomatitis, both acute and recurrent chronic cases.
2. Alveolalgia.
3. Periodontal disease.
4. Root canal therapy.

The use of penicillin in Vincent's stomatitis was restricted to stubborn, chronic cases which defied routine methods of treatment, or to acute cases which necessitated drastic action. The standard methods of treating Vincent's infection sufficed in mild infections and penicillin treatment was not necessary.

Penicillin Packs

Vincent's Infection—1. In cases of Vincent's stomatitis in which only one quadrant or one arch was affected, the mouth was sprayed thoroughly with a saline mouthwash in order to remove all debris and necrotic material (Fig. 1).

2. The interproximal spaces were blown dry with an air syringe and packed with cotton. The cotton was saturated with penicillin solution of strength of 10,000 units per cubic centimeter (Fig. 2).

3. Sheets of dental dry foil (adhesive tin foil) were then burnished over the teeth, extending from the alveolar gingivae on the buccal and labial over the teeth onto the palate (Fig. 3). This effectively sealed the medicament into place and prevented its dilution by the saliva. Foil, so applied, will remain in place for at least six hours and in no way interferes with eating or talking.

4. This treatment was given three times a day: the first thing in the morning; immediately after lunch; and at the end of the working day. The patients were instructed to keep the packing in place overnight.

5. The results proved to be gratifying and are tabulated in Table I. Usually three days of this treatment were sufficient to check acute cases of Vincent's infection.

6. Four hours after the initial treatment, patients reported a cessation of pain. The following morning, the gingivae presented a change from "angry" red to a more healthy pink color, although the marginal gingivae and interdental papillae might still appear injected in scattered areas.

7. By the end of the second day, a great improvement in tissue tone accompanied by complete absence of necrotic material was usually in evidence. The teeth were then scaled and polished and penicillin packs were again placed three times daily as described previously.

8. On the morning of the third day, patients returned for observation and continued treatment.

9. On the fourth day, recovery was usually so advanced that after a reiteration of oral hygiene instructions, the patient was dismissed.

Table I—Penicillin Treatment of Vincent's Stomatitis

Treatment	Number patients	Average number treatments	Average number days	Average dose per treatment (Oxford units)
Cotton packs with dry foil	23*	9	3.0	5,000
Mouth rinses	8	7	4.0	5,000
Gelatin pastilles (400 Oxford units)	9	48 pastilles	2.5	400
Dry powder	8	6	2.8	10,000 (estimated)

*Six recurrences of infection in localized areas.

10. Of twenty-three patients so treated, only six returned with a recurrence of Vincent's infection. These patients, however, had presented a long clinical history of recurrent infection and had been at different times treated with chromic acid and peroxide, bichloride and peroxide mouthwash, iodine, and silver nitrate. These patients showed little persistence at good oral hygiene and offered but meager cooperation.

Periodontitis—Two cases of severe periodontitis were treated by the cotton pack and tin foil method. In each instance, the loss of bony support was considerable, and the gingivae were painful and of an "angry" red color. The areas were the upper anteriors in one case, and the upper left bicuspsids and the first molar in the other.

1. The teeth were first thoroughly scaled. Penicillin packs with dry foil were then applied.

2. Both patients felt greatly improved after the first day, and more so the second day. At this time, the pockets appeared clean and a proliferation of healthy epithelial tissue was evident.

3. After the third day, treatment was discontinued inasmuch as the tissues showed no change and it was felt that further treatment was not warranted. Final prophylaxes were given and the patients were dismissed.

4. No further complaint was brought to our attention after a lapse of ten weeks.

Alveolgia—To date, penicillin has been used in five cases of alveolgia, six cases of apicoectomy following root canal fillings, and one case of an apicoectomy of two upper anterior teeth in which a large cyst was removed after root canal therapy was performed. Alveolgia seems to

respond well to penicillin treatment.

1. In each case, a blood clot was partly or completely absent, the socket was painful, and the surrounding tissues were inflamed.

2. After thoroughly syringing the socket of all debris with saline, bleeding was stimulated with an instrument, and cotton pellets saturated with penicillin were packed into the socket. These were changed three times a day until the condition improved.

3. Relief from pain occurred in two to three hours, and on the second day the sockets showed some improvement.

4. After three days of applying successively smaller dressings of cotton pellets saturated with penicillin, the alveolar bone was found to be covered by a thin, white, glistening membrane which hemorrhaged easily when probed. At this stage the socket

Table II—Penicillin Treatment of Other Oral Conditions

Pathosis	Number patients	Treatment	Average number treatments	Average number days	Average dose per treatment (Oxford units)
Pericoronitis	4	Gelatin pastilles	40 pastilles	2.5	400
Alveolgia	5	Cotton packs	9	3	2,500
Periodontitis	2	Cotton packs, tin foil	6	3	5,000
Post-Apicoectomy	3 4	Solution Dry powder	1 1	1 1	5,000 8,000 (approx.)
Root Canal Therapy	5* 3	Solution Solution	10 4	5 2	2,000 2,000

*Failures.

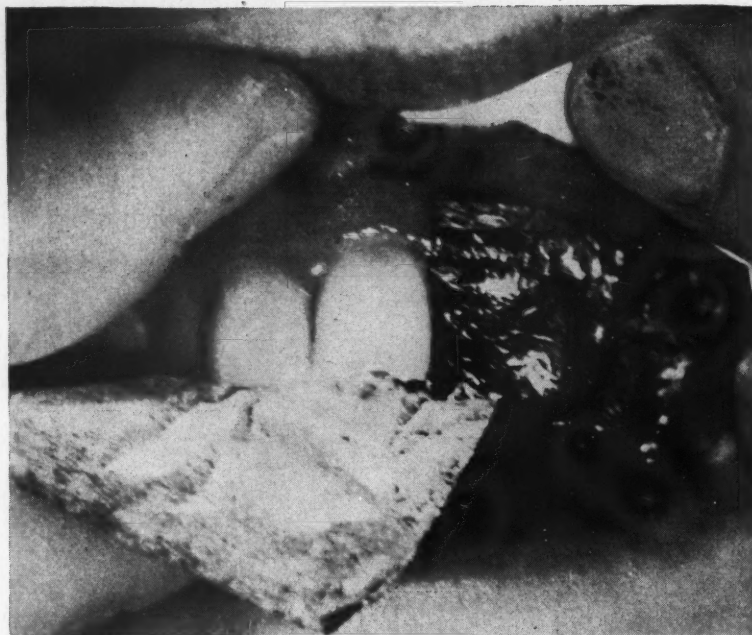


Fig. 3—Adhesive tin foil is burnished over the teeth to retain the medication. The patient reported relief from pain the following day, when the teeth were scaled and re-packed with penicillin. On the third day the teeth were polished and again packed. The patient was dismissed without treatment on the fourth day. The tin foil was kept in place for at least nine hours each time.

was dried and filled with a petrolatum ointment to keep food debris from the socket, and the patient was dismissed. Subsequent recovery was uneventful.

Mouth Rinses for Vincent's Infection

1. Penicillin mouth rinses have been used in the dental clinic to mitigate acute cases of Vincent's infection before the teeth are scaled and polished. Following the prophylaxis, the rinse is continued twice a day for two days to promote recovery.

2. The method used is to spray $\frac{1}{2}$ cubic centimeter of penicillin solution (5,000 Oxford units) into the mouth. The patient swishes this about for twenty minutes, then expectorates it.

3. The results have been extremely satisfactory.

Dry Powder for Vincent's Infection

Intensive therapy with high concentrations of penicillin can be achieved by use of the dry powder.

1. The area to be treated is isolated and blown dry.

2. Penicillin powder is then dabbed into the interproximal spaces and under the free gingival margin. The medication is most effective when the area is covered with adhesive tin foil to prevent dilution by saliva.

3. Two treatments are given daily: one in the morning, and one late in the afternoon.

4. As the infection subsides, scaling and polishing are instituted.

5. Recovery is usually sufficiently rapid to discontinue treatment after the third day.

Gelatin Pastilles for Vincent's Infection and Pericoronitis

A fourth method of treatment is by the use of gelatin pastilles containing penicillin, as described by McGregor and Long.³

1. Necrotic tissue is swabbed free with cotton on applicator sticks and the mouth is mechanically cleaned with a saline spray.

2. Gelatin pastilles of 400 units of penicillin per cube are then placed in the buccal vestibule, and the patient is instructed to allow it to dis-

³McGregor, A. B., and Long, D. A.: Use of Penicillin Pastilles in Oral Infection, *Brit. M. J.* 25:686-689 (November) 1944.

solve in place. As soon as one pastille is dissolved it is replaced by another.

3. The average duration of each cube is thirty minutes. Some patients can retain them for almost an hour.

4. The method is unique in two ways:

a) A constant supply of penicillin is liberated in the mouth.

b) The patient can treat himself.

The second factor was convenient inasmuch as the patient could be issued a supply of penicillin cubes directly in the morning, after lunch, and before going off duty. The patients treated were Service personnel doing desk work, and for them the method of medication was as simple as chewing gum or sucking on a candy mint.

5. The gelatin cubes were made as follows:

Plain gelatin	32 grams
Water	80 cubic centimeters
Glycerin	80 cubic centimeters
Penicillin	100,000 Oxford units
Peppermint flavoring	to suit taste.

The gelatin was soaked in the water, and was then dissolved in glycerin and heated to 180° Fahrenheit in a saucepan. This mixture was cooled to 104° Fahrenheit and the penicillin was added and well dispersed. The mixture was immediately chilled in a shallow tray. After it solidified, it was cut into 250 cubes, giving a content of 400 Oxford units per cube. These cubes remain firm at room temperature and will retain their potency for several weeks when kept at a temperature below 40° Fahrenheit.³

6. Four cases of severe pericoronitis were treated with gelatin pastilles. Diagnostic smears taken from the pockets showed great numbers of spirochetes and fusiform bacilli. In each case, the redness and necrotic slough disappeared after the second day, although some pain and swelling of the submaxillary lymph nodes persisted for an additional day in one case, and three additional days in another. Smears taken after thirty-six hours showed negligible spirochetes and fusiform bacilli. Both of these teeth were subsequently extracted.

Root Canal Therapy

Of eight cases of root canal sterilization attempted by use of penicillin, only three were considered successful. The pulps in these teeth became gangrenous following traumatic injury.

1. Sterile cultures were obtained after irrigating the canals with penicillin solution and sealing saturated paper points and cotton in the canal twice daily for two days. It was estimated that .2 cubic centimeters of solution, or 2000 units, were used per treatment.

2. The five unfavorable cases had putrescent canals, and two were found to have granulomas upon subsequent apicoectomy. These cases were treated by irrigation and the sealing of penicillin into the canal (as in previous cases) twice daily for five days. After this time, penicillin was discontinued and azochloramid and formocresol dressings were placed for two days. Cultures taken at the end of the two days were negative and the canals were then filled.

3. This experience invoked the discontinuance of penicillin to sterilize root canals inasmuch as it was felt that the time-tested azochloramid, formocresol, and beechwood creosote were less time-consuming, required less treatments, and produced more reliable results. Furthermore, many organisms which are commonly present in putrescent pulps can be considered penicillin-resistant.

4. Inasmuch as penicillin is chiefly a bacteriostat, it cannot be effective in the root canal of a tooth where there is no circulation of tissue fluids of the body, and bacterial antibodies are therefore absent. This seems to contraindicate the use of penicillin for routine use in root canal therapy as only carefully selected cases will be successful.

Post-Apicoectomy

One-half cubic centimeter of penicillin solution of strength 10,000 units per cubic centimeter, or the application of dry powder the volume of a safety matchhead, placed into the surgical area of an apicoectomy before suture, seems to be of considerable value. The control of retained infection by the action of the penicillin ensures a greater incidence of success.

1. Dry penicillin powder is extremely irritating on first contact with an open wound. When applied to an anesthetized area, however, there is no pain or reaction.

2. The powder is quickly dissolved by the hemorrhage from the alveolar bone, and, being present in high concentrations, exerts the maximum bacteriostatic effect.

3. Six cases treated in this manner and observed postoperatively for three days produced the following observations:

a) No after-pain and no discomfort were experienced.

b) There was no swelling.

c) The tissues at the incision remained a normal pink color and seemed to heal at an accelerated rate.

4. Sutures were removed on the third day and subsequent healing was uneventful.

Summary

1. Penicillin seems to be of definite value in the treatment of many oral conditions. It is particularly effective in the treatment of Vincent's stomatitis, and will be effective in many such cases when other means of therapy fail. A sufficient dosage must be used, however, and the medicament should preferably be sealed on the site of the lesion.

2. Penicillin mouthwashes do not seem as effective as local applications

of saturated cotton packing covered with adhesive dry foil.

3. Thorough scaling, complete prophylaxis, and the elimination of possible incubation zones, are still necessary.

4. The use of penicillin pastilles or mouth rinses following prophylaxis seems to be a satisfactory method of treating Vincent's infection effectively and with the minimum amount of treatments. The average mild case can be treated in three or four appointments and one follow-up observation, in a total lapse of three days. Patients state that the treatment of a localized lesion also makes the rest of the mouth feel better.

5. Topical application seems to be adequate in most cases although several investigators have injected penicillin locally with good results.^{4, 5} It seems that intravenous, subcutaneous, or intramuscular administration of penicillin is not necessary for dental infections, except in such cases as osteomyelitis, cellulitis, or severe Vincent's infection of the fauces and tonsils. These cases require hospitalization and medical care, and should be treated by a physician.

6. Penicillin as it is prepared today must be kept refrigerated, and solutions should be used within forty-eight hours.⁶ The dry powder is much more convenient to use and enables one to produce high concentrations of the drug in localized areas. The powder is well tolerated by intact oral tissues; no irritation has been experienced in any of the cases treated.

⁴Weiner, Leonard: The Use of Penicillin in Clinical Dentistry, J.A.D.A. 32:539-551 (May) 1945.

⁵Schessler, C. F.; Fairchild, J. M.; and Stransky, I. M.: Penicillin in the Treatment of Vincent's Infection, J.A.D.A. 32:551-554 (May) 1945.

⁶Penicillin Bulletin, Burroughs Wellcome and Company, New York.

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A Controlled, Correctable, and Physiologically Tolerable Impression Technique

C. H. MOSES, D.D.S., Hamilton, Ontario

The first installment of this article, which appeared in the April issue, presented the preliminary impression technique, the methods of outlining the impressions and casts and of processing the trays, and the initial steps in taking the final lower impression.

This concluding installment describes the treatment of the periphery of the lower impression to ensure the desired close fit, and the entire technique for taking the impression for the upper denture.

THE IMPRESSION technique presented here is now a proved one. It has been uniformly successful in hundreds of cases. As far as I am aware, all the laws of physics and physiology are met. No mysticism is attached to vague formulae. The laws concerning the retention of dentures were studied, after which the technique and materials that meet these laws were chosen.

Lingual Periphery

1. Pencil on green low-fusing (about 115° F.) impression compound just inside the periphery of the impression (Fig. 12), commencing at the posterior lingual border from the center of the crest of the ridges lingually down around the posterior curve and up to about the third molar area. It is important that a lower-fusing compound be used at the periphery because the tissues are not capable of exerting much force to mold a stiff compound; nevertheless, the compound must not "run off" as some washes do.

2. Flame the green tracing; dip into hot water only the part that has been flamed; insert into the mouth;



Fig. 12—Pencil green low-fusing impression compound from the posterior lingual border lingually to the third molar area of the lower impression. (For the sake of photographic contrast, the green compound is represented in white.)

Fig. 13—After flaming the green tracing and placing the tray in the patient's mouth, have the patient extend the tip of the tongue outside the mouth. Tongue movements help mold the impression to increase the adhesion.

and have the patient make the following tongue movements in rhythm for about three seconds or four seconds:
a) Extend the tip of the tongue

forward outside the mouth (Fig. 13).

b) Place the tip of the tongue in one cheek (Fig. 14), then in the other cheek.

c) Push the tip of the tongue hard on the handle (Fig. 15).

d) Swallow while still keeping the tongue in the hollow of the handle.

This procedure may seem superfluous but it takes only a little time to teach it to the patient and establishes a rhythm which can be maintained for the entire impression of the lingual periphery.

3. It has been explained that extruding the tongue brings the glosso-palatine muscle and the fold of the lingual mucous membrane against the posterior of the impression, thereby molding it. The tongue in the cheek pulls the mucolingual fold up against the lingual border of the impression at about the bicuspid and molar regions. The tongue extended outside the mouth also will mold the anterior lingual fold. Pressing the tongue hard against the handle of the tray tightens (contracts) the mylohyoid muscle, thus pushing up the submandibular and sublingual glands as well as giving tonus to the mucous membrane. The genioglossus and geniohyoid muscles also contract and have their influence at the anterior lingual periphery. Swallowing permits these muscles an extra necessary contraction. Stroking beneath the chin with the fingers (Fig. 16), approximately under each area to which green compound is added, likewise seems to mobilize these muscles by lifting the floor of the mouth slightly.

4. Remove the impression from the mouth, chill, and examine. Some of the green compound will have run outside and over the red. If it has been penciled on too thick, it may run over the crest of the ridge and lift the impression, breaking the contact and loosening it. Sometimes a raised edge can be felt separating the green compound from the red.

5. Corrections can be made at this stage. Flame the compound lightly and rapidly (do not blister it), dip the green compound rapidly into hot water, insert into the mouth, and have the patient repeat the forementioned tongue movements. This time the

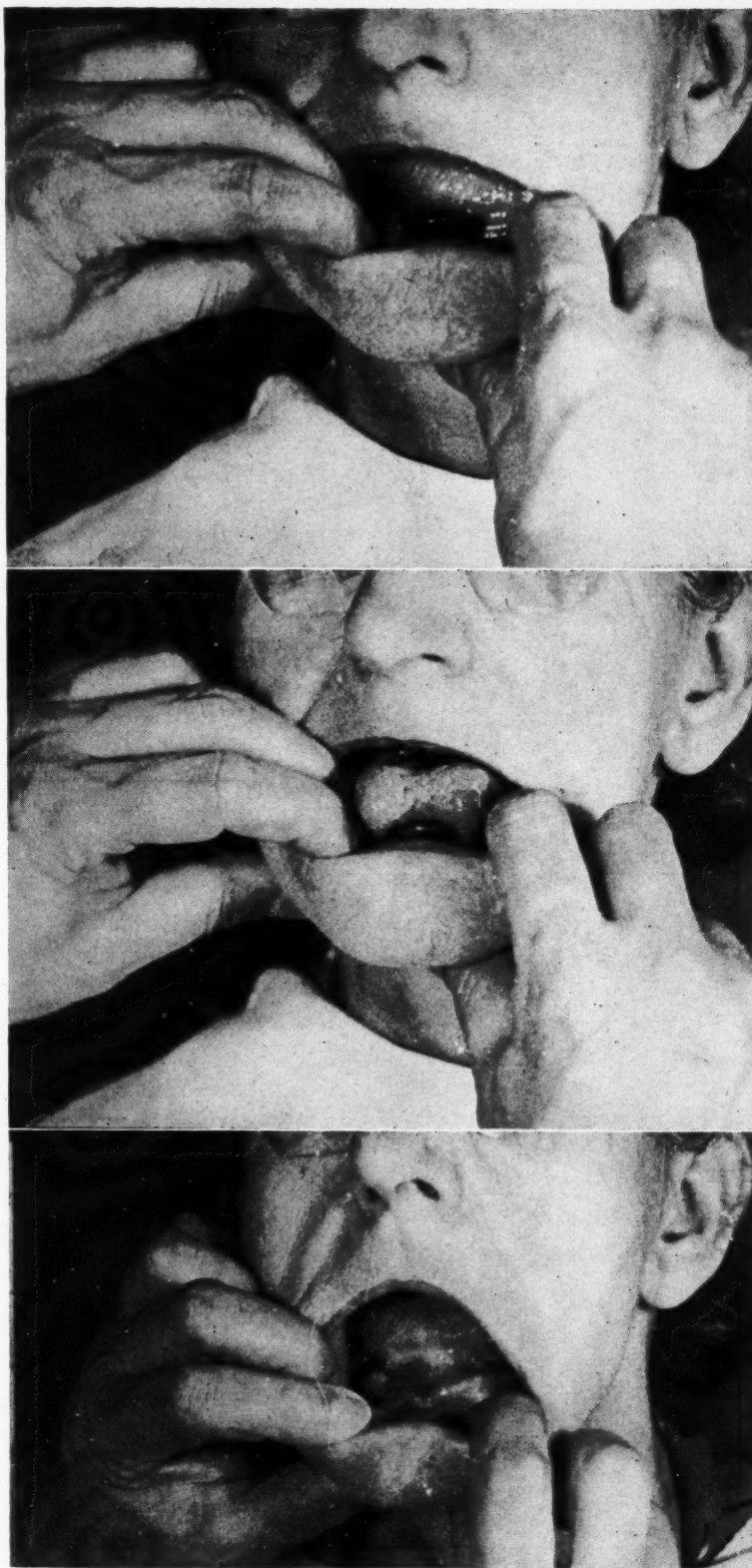


Fig. 14—Have the patient place the tip of the tongue in one cheek, then in the other. Fig. 15—Have the patient push the tip of the tongue hard on the handle of the tray. Fig. 16—Stroking the chin beneath the areas penciled with green compound mobilizes the genioglossus, geniohyoid, and mylohyoid muscles.



Fig. 17—Have the patient lick the upper lip from commissure to commissure after the third flaming.

Fig. 18—Pencil green low-fusing impression compound from the posterior lingual border buccally to the third molar area.

Fig. 19—The buccinator muscle cuts across the ridge at the posterior of the heel of the impression at an angle from the cheek to the throat.

green and red compounds seem to fuse and the impression is tighter. The process should be repeated if any further correction is necessary.

6. The same procedure is carried out all around the lingual periphery, covering the areas in the following order:

a) Trace the green compound on one side from the third molar area to that of the cuspid, and flame lightly and rapidly. Insert into the patient's mouth and have him repeat the tongue movements.

b) Trace the compound on the same area on the opposite side and repeat the forementioned procedure.

c) Trace the compound in the area from cuspid to cuspid, and repeat the procedure. As a final step in adaptation in this area, have the patient lick the outside of the upper lip from commissure to commissure on this third flaming (Fig. 17).

Outer Periphery

1. Trace green compound from the center of the crest of the ridge on the outer posterior border to the third molar region on the buccal (Fig. 18).

2. The buccinator muscle has three origins: the upper and lower ridges at about the first, second, and third molar regions; and a thin band (ligament) called the pterygomandibular raphe, which separates the buccinator from the superior constrictor muscle. These muscle fibers, originating in different places, enter the lip and contribute to the muscle fibers of the lip which make up the orbicularis oris. At the posterior of the heel of the impression, therefore, the buccinator cuts across the ridge at an angle from the cheek to the throat (Fig. 19). The buccinator muscle is, thus, not exclusively a cheek muscle inasmuch as the pterygomandibular raphe is definitely on the lingual and a part of the buccinator muscle. For this reason the path of the buccinator muscle must be observed to be sure that the posterior edge of the impression does not interfere with the path of the muscle fibers.

The buccinator is so formed in the molar region that it curves in where the teeth are placed; therefore, the muscle appears to rest upon the pe-

riphery on the lower buccal border. This seal adds greatly to the retention of the denture. The denture actually rests on some of the muscle fibers in the molar region but the muscle is so thin there that it influences the denture only slightly. It must be borne in mind that the muscle should contact and lie over the periphery in the buccal area, but without distension. The impression becomes considerably more retentive when the area is adequately filled in.

3. After having traced the green compound, tempered it in hot water, and inserted it into the mouth, have the patient say "oh" and then "ee." This must be done vigorously, the "oh" drawing the lips into a pucker (Fig. 20) and the "ee" stretching them back into a wide grin (Fig. 21). While the patient is saying "oh," push the index finger into the cheek, pulling the mucobuccal fold taut. These sounds should be repeated in rapid succession until the compound hardens. Repeat this procedure several times if necessary until the desired seal is obtained.

4. The same procedure (including the tracing of compound and tempering it in hot water, and the lip movements) is carried out all around the outer periphery, covering the areas in the following order:

- a) From the third molar to the cuspid region on one side.
- b) The same area on the opposite side.
- c) The anterior outer periphery from cuspid to cuspid.

5. During the tracing and heating with the flame, care should be taken to so hold the flame that *only* the part that is newly treated is flamed. A common error is to unintentionally heat the lingual, which has already been adapted, while flaming the buccal. This will cause some of the adhesion to be lost. Should such an accident occur, the impression may be corrected as follows:

- a) Dip the entire impression in hot water for about three seconds.
- b) Insert into the mouth, and have the patient do the tongue movements that were made in checking the lingual periphery. Chill.
- c) Redip the impression in hot

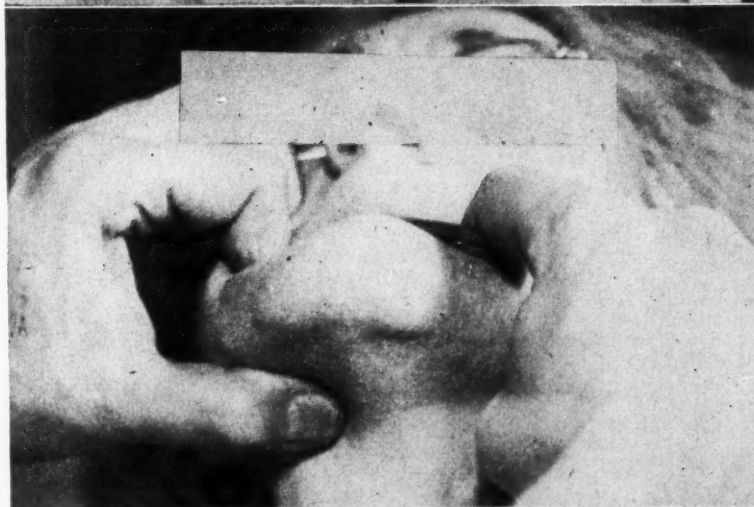


Fig. 20—To obtain good seal at the outer periphery, have the patient say "oh" with vigorous puckering of the lips.

Fig. 21—Have the patient say "ee" with extreme stretching of the lips, alternating this sound with the "oh."

Fig. 22—If the palatal vault is high, cuts are made in the tray at the center of the hard area and on the ridges to relieve compression and minimize displacement of tissue.

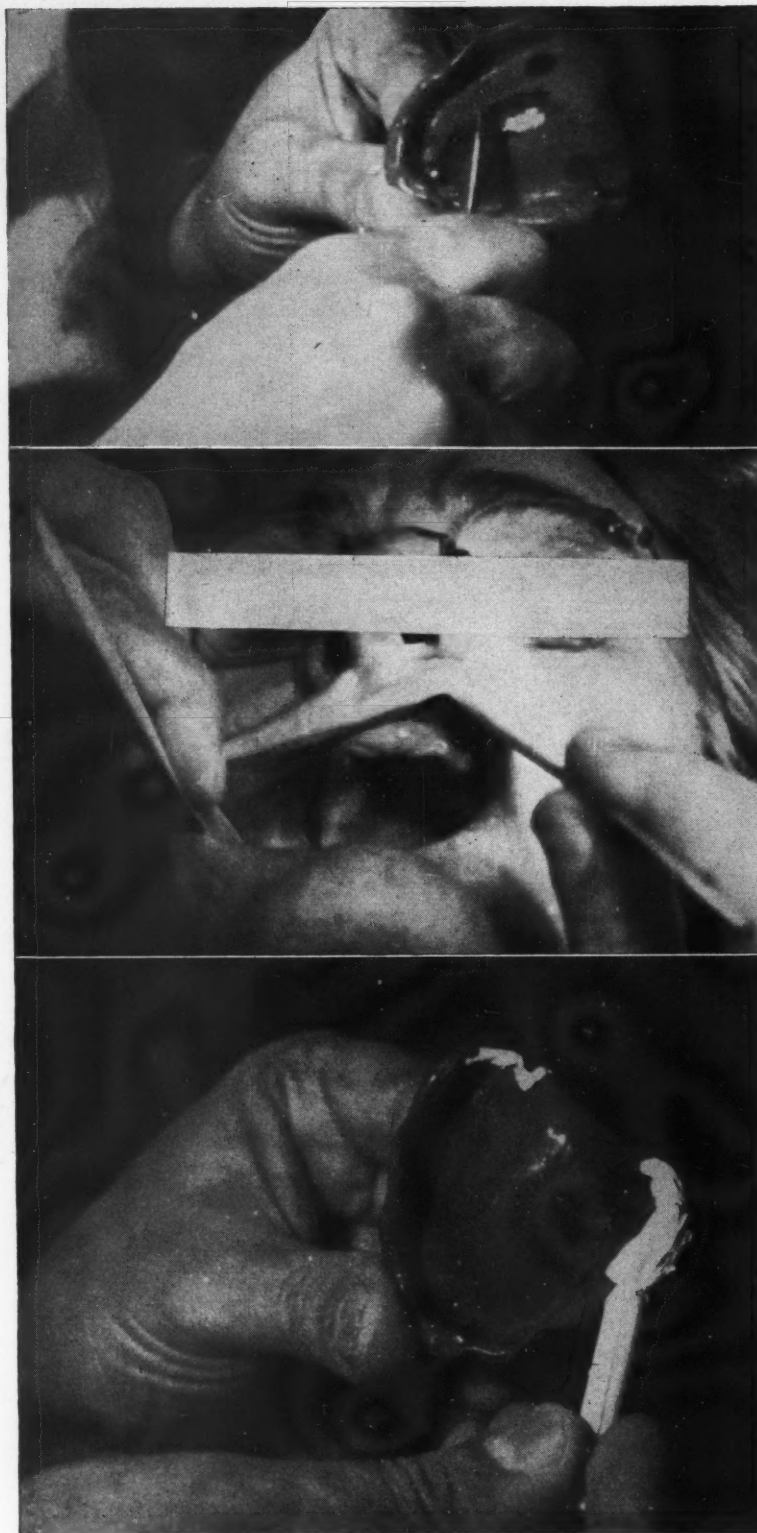


Fig. 23—Relieve the palatal impression at the three foramina and the hard area with a scraper.

Fig. 24—If there is considerable space buccal to the tuberosity, this should be occupied by the denture for retention.

Fig. 25—Trace green compound on the distobuccal of the buccal flange of the upper impression.

water, and have the patient do the "oh" and "ee" motions. Chill.

d) Repeat the procedure once more, and you will find that the impression will have tightened considerably.

Upper Impression

After the upper tray has been tested for displacement, it is prepared for the reception of compound. With a medium-sized fissure bur (number 561), either one or three lines are cut on the tray. If the palate is fairly flat and there is a hard area in the median line, one cut is made in the center of this area from the incisal papilla to the end of the hard area. If the vault is high, additional cuts are made on the ridges (Fig. 22). These serve to relieve the compression and tend to minimize the displacement of tissue. Cuts also are made over the center of the ridges if they are flabby.

Palatal Area

Following the same technique as was carried out in taking the lower impression, an impression of the palatal area is taken first, then one of the periphery.

1. Fill the inside of the tray with compound about 5 millimeters thick. Flame; temper; and insert into the mouth, holding it in place for about two minutes, firmly but lightly. The compound will ooze out of the fissures. Remove and chill.

2. Flame the entire palatal area again, permitting the heat to penetrate for about a millimeter. Temper; insert into the mouth, holding lightly; remove; and chill in cold water. If hollows appear corresponding to the cuts in the tray, they may be the result of the compound having run off. This should be corrected during the next flaming.

3. Flame the entire palatal area, and warm over the area where voids appeared on the other side of the tray. Temper; insert into the mouth; and gently pat the area, pressing it into contact. Chill.

4. Relieve the palate at the three foramina and the hard area, using a suitable scraper (Fig. 23). The area over the anterior papilla should be well relieved to prevent impingement

on the nerves and blood vessels leaving the anterior palatine foramen. Excessive pressure in that area likewise often causes a burning sensation under the upper denture.

The posterior foramina also should be relieved although they are generally protected by the pads of fatty tissue and glands over them. Sometimes the edges of the foramina, or the trough in which the vessels and nerves lie after they leave the foramina, are quite sharp and spinelike. They could cause a great deal of discomfort. They are nearly always seen on the impression of the palate as small raised areas opposite the third molar areas about two fifths of the distance from the ridge toward the median line. If these are not visible, the finger tips can locate them easily. Mark them with an indelible pencil and transfer to the impression. Relieve by scraping. Any hard areas should be scraped. If exaggerated hard areas (torus palatinus) exist, they should be scraped a bit more.

5. Glaze the entire palate lightly, dip into hot water, insert into the mouth, remove, and chill. Repeat the dipping process several times, as in the lower impression, dipping into hot water, inserting into the mouth, and chilling.

Periphery

1. Trace the green compound on the inner border of the periphery at the distal of the tuberosity on both sides. After the usual tempering, insert into the mouth and have the patient protrude the mandible forward and move it from side to side. This outlines the hamular notch area and also defines the posterior border of the area around the tuberosity or heel. The tissues of the ramus will massage the green outline as the upper part of the ramus or the coronoid process presses the border area of the tuberosity. As before, reheat, temper, and chill until the green and red compounds fuse.

2. The posterior of the vestibule of the mouth is an extremely important area from the standpoint of retention. Before the green compound tracing is made, an examination should be made of the area buccal to the

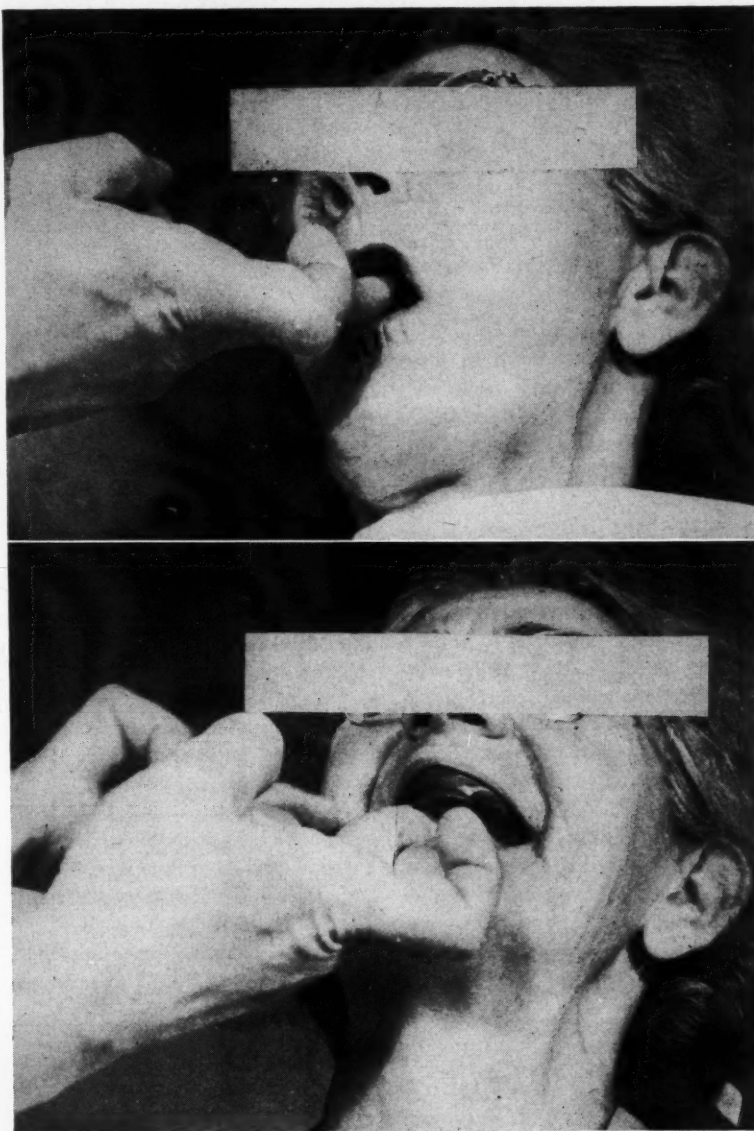


Fig. 26—To obtain good seal, have the patient say "oh" with vigorous puckering of the lips.

Fig. 27—Have the patient say "ee" with extreme stretching of the lips, alternating this sound with the "oh."

tuberosity. It will be observed frequently when the mouth is wide open that there is a considerable space in that region (Fig. 24). This space should be completely occupied by the denture for better retention. The practice of making thin peripheries, particularly in this region, is to be condemned.

3. Having thus obtained a view of the hollow in the distal of the vestibule, a corresponding amount of green compound is traced on the distobuccal part of the buccal flange of the maxillary impression (Fig. 25).

Flame, temper, insert into the mouth, and have the patient say "oh" and "ee" (Figs. 26 and 27). Repeat this procedure several times as in treating the lower denture.

4. Undercuts should have surgical treatment wherever possible. Having the denture end at the greatest convexity on the buccal of the tuberosity, as is often done, should be discouraged. I trim off the undercut on the impression with a sharp knife, bypassing the undercut, and allow the periphery to continue to the fold.

(Continued on page 267)

A Case Report of Mouth Rehabilitation and Restoration of Vertical Dimension

GABRIEL WEISS, D.D.S., Philadelphia

This is a presentation of a case history in which the fourteen remaining teeth, many of which were carious, were restored, the missing teeth were replaced, and the vertical dimension was increased.

Case History

WHEN THE patient, a man aged 29 years, presented himself for treatment, his mouth appeared to be in a hopeless condition. Many of the natural teeth were missing, especially in the maxilla, and the bite had become closed over a period of years. The remaining teeth showed many carious lesions.

A diagnostic study was made. This included a complete case history, thorough clinical and roentgenographic examinations, and accurate models of the patient's mouth. It was decided to attempt a complete rehabilitation

of the patient's dental tissues and to restore some of the lost vertical dimension.

Existing Dental Conditions

1. There were four natural teeth in the maxilla, and ten in the mandible (Fig. 1). All these teeth had carious lesions.

2. The mandibular left second and third molars had had carious pulp exposures which had necessitated extraction even before the study was undertaken.

3. The mandibular right second bicuspid was badly broken down so that it, too, was extracted.

4. The maxillary cuspids and bicuspids and the mandibular left first bicuspid exhibited gingival erosion and caries and had amalgam and silicate restorations.

5. The vertical dimension had gradually decreased. The existing

teeth and bite are shown in Figure 2, and the patient with his teeth closed in centric occlusion is shown in Figures 3 and 4.

Method of Treatment

Vertical Dimension—The first step was to determine the extent to which the patient's vertical dimension could be increased.

1. Wax bite-blocks were made using the study models which had been poured from accurate alginate impressions. With these blocks and the aid of a Fox occlusal plane guide the proper plane of occlusion was established intra-orally. This increased the vertical dimension approximately 5 millimeters in the anterior region. The naturally existing free space between the maxillary and mandibular teeth with the mandible in resting position was almost completely eliminated.



Fig. 1—Accurate study models showing conditions existing before treatment.

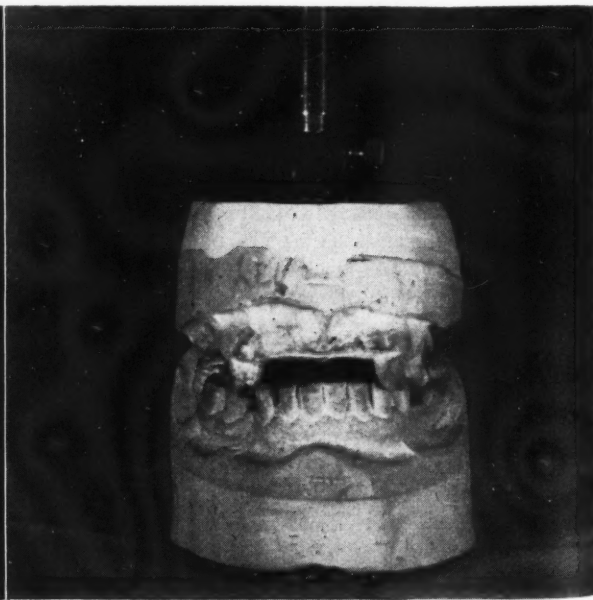


Fig. 2—Articulated study models in existing centric occlusion. Note rotation of maxillary right bicuspid.



Fig. 3—Front view of patient with teeth closed in centric occlusion before treatment. Note protrusion and fullness of lower lip.



Fig. 4—Lateral view with teeth closed in centric occlusion. Note position of chin and protrusion and fullness of lower lip.

2. With a mixture of plaster and pumice, the bite-blocks were milled in by the patient to establish the proper curve of Spee. This procedure closed the newly established vertical dimension a distance of about 2 millimeters. Thus the patient's bite was opened only 3 millimeters in the anterior region, still permitting a free space of about 2 millimeters.

3. With the bite-blocks locked in centric position, the study models were mounted on a balancer type articulator, and the instrument locked and set for the determined bite (Fig. 5).

Dental Restorations—The carious lesions on the teeth, with the exception of the following, were treated by suitable restorations:

1. The maxillary right second bicuspid, left cuspid, and left second bicuspid, as well as the mandibular left first bicuspid, were prepared as shouldered jacket preparations (Fig. 6).

2. The mandibular right first molar was prepared for a mesio-occluso-distal inlay, with a built-up occlusal surface (Fig. 6).

3. Individual tube impressions were taken of the forementioned preparations and copper-plated dies were made (Fig. 6).

4. Base-metal copings were then constructed for each of these. The

copings were so designed as to have sufficient retention to enable them to be held in place in the master impressions (Fig. 7).

5. After trying these copings in the mouth for accuracy of fit (Fig. 8), full mouth impressions were taken in elastic hydrocolloid with these in position. When the impressions were removed from the mouth, the copings remained in place, allowing for an accurate seating of the dies.

6. Hard stone models were poured, and these were transferred to the articulator one at a time using the already mounted study models and prepared bite-blocks.

7. Cast gold crowns with acrylic veneers were constructed for the maxillary right and left second bicuspids and the mandibular left first bicuspid (Fig. 9). It was decided to use this type of restoration inasmuch as these teeth were to be clasped by the re-



Fig. 5—Mounted models with articulator locked in position illustrating the new determined bite. Compare with original bite in Figure 2.



Fig. 6—Accurate master models containing the copper-plated dies of the teeth prepared for individual restorations.

movable prosthetic appliances which were to be made.

8. An acrylic jacket was constructed for the upper left cuspid.

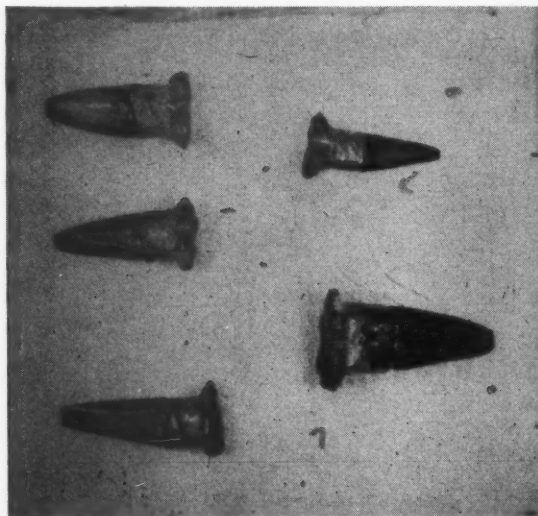


Fig. 7—Copper-plated dies with base-metal copings seating individual dies in master full mouth impressions.

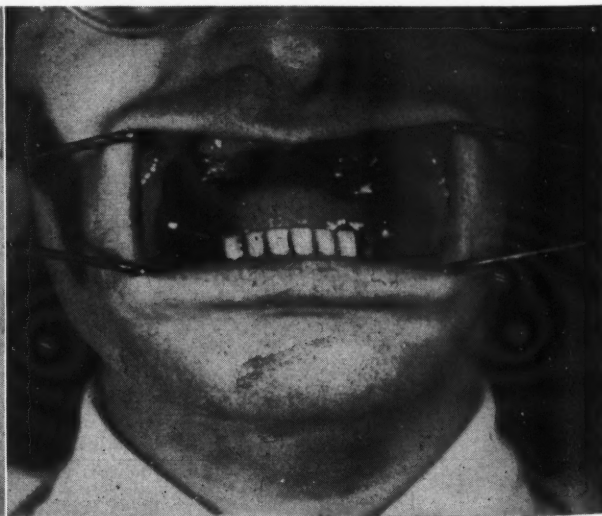


Fig. 8—Base-metal copings in position prior to taking full mouth master impressions.

9. A mesio-occluso-distal cast gold inlay with a built-up occlusal surface was made for the mandibular right first molar (Fig. 9). In constructing these restorations the already prepared bite-blocks with their established curve of Spee were utilized.

10. The crowns and inlay were then tried in the mouth for accuracy of fit. With these in position without cementation, full mouth impressions were again taken in elastic hydrocolloid. The gold and acrylic restorations came off when the impressions were removed from the mouth. The crowns and inlays were then carefully removed from the master impressions and these were poured in a hard stone (Fig. 10).

11. These models were then transferred one at a time to the articulator, once more using the previously constructed bite-blocks and study models. This provided articulated models representing the mouth with all the fixed restorations in place.

12. The lower model was surveyed and a one-piece casting designed. This partial denture was cast in gold and had a small onlay extending over the occlusal surface of the mandibular right third molar which was in the position of the second molar (Fig. 11). This was done to bring the tooth into proper occlusion.

13. An acrylic partial denture with hand-wrought gold clasps was design-

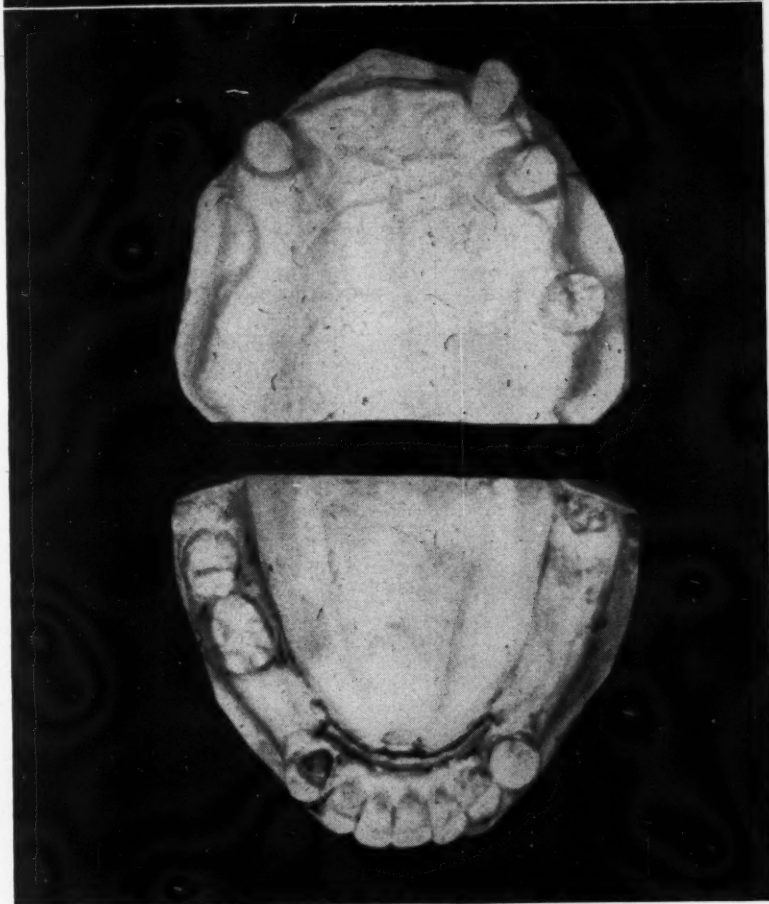
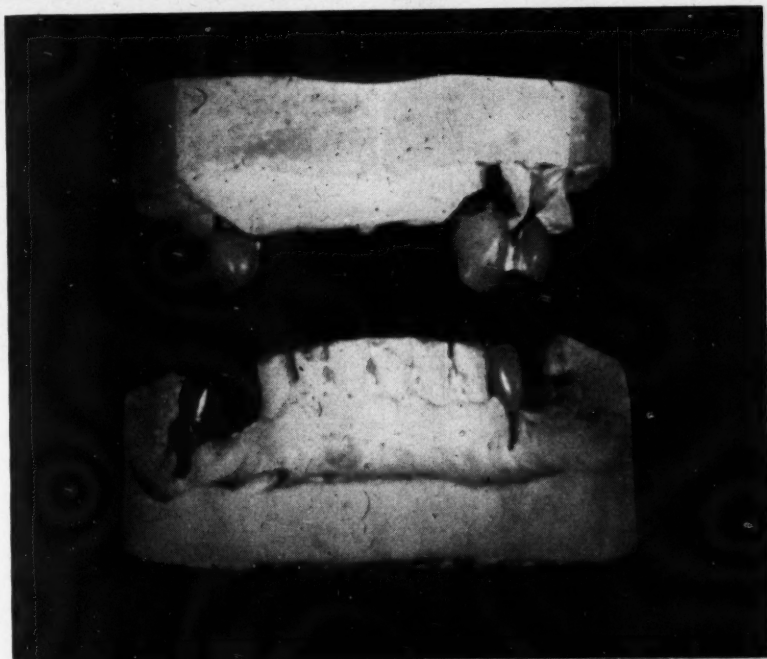


Fig. 9—Completed individual restorations.

Fig. 10—Working models depicting patient's mouth with fixed restorations in position. Compare position of upper right bicuspid with the same in Figure 1 to see how its alinement was corrected by the crown.

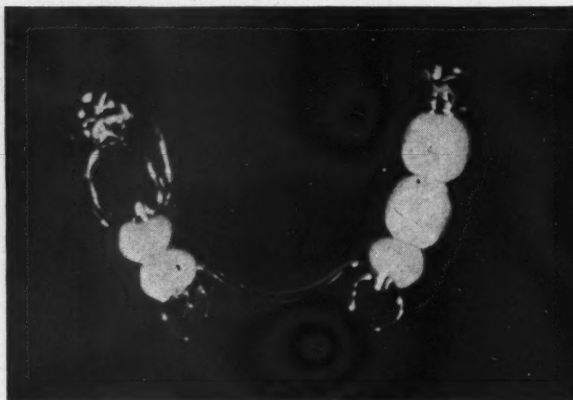


Fig. 11—One-piece cast gold partial denture for mandible. Note onlay on the left for bringing third molar into proper occlusion.



Fig. 12—Acrylic partial denture with hand-wrought clasps for maxilla.

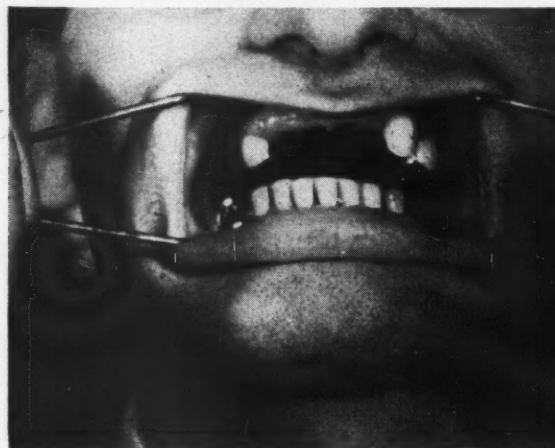


Fig. 13—Fixed restorations cemented in position.



Fig. 14—Teeth in centric occlusion after the insertion of all the restorations and partial dentures.

ed and constructed for the upper jaw (Fig. 12). This denture was entirely tissue-bearing, with light clasps for retention. These appliances were then finished without a try-in inasmuch as it was necessary in this case to insert the crowns, inlay, and partial dentures at one sitting since the vertical dimension was being increased.

14. First, the fixed restorations were cemented in place (Fig. 13). Then the partial dentures were inserted, and the occlusion balanced by judicious spot grinding of the teeth and restorations (Figs. 14 and 15). After the patient wore the appliances for a week, he was recalled and the occlusion was checked carefully to see if any other adjustments were necessary.

Results

1. From the first day the patient was completely comfortable with the

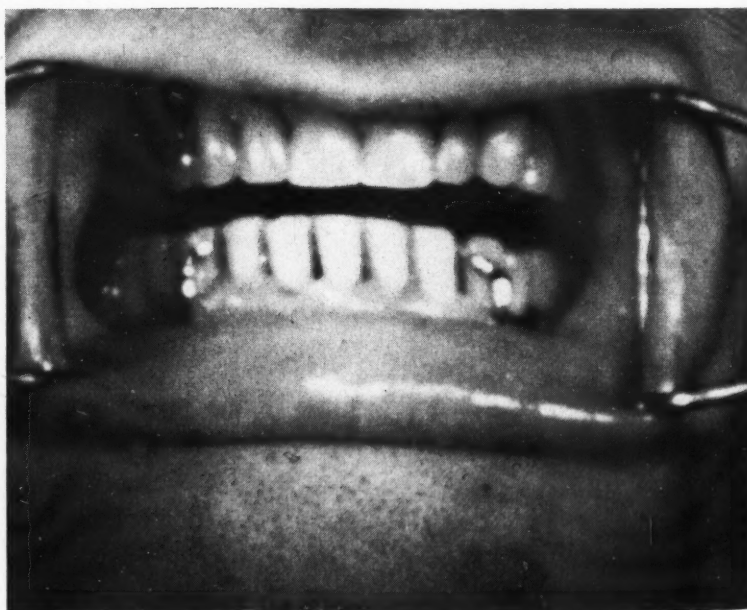


Fig. 15—Patient's mouth after insertion of the fixed and removable restorations.



Fig. 16—Front view with teeth closed in centric occlusion after treatment. Compare with Figure 3 to note improvement in facial features and lips.



Fig. 17—Lateral view of patient with teeth closed in centric occlusion after treatment. Compare with Figure 4 to note improvement in facial features and lips.

restorations and partial dentures in his mouth. He did not mind the slight increase in vertical dimension and could masticate his food well.

2. There was a definite improvement in his appearance as a result of this treatment (Figs. 16 and 17).

3. On re-examination several

months later, the patient's mouth and occlusion were found to be in the same favorable condition as on the day treatment was completed.

200 South Forty-Sixth Street.

A Controlled, Correctable, and Physiologically Tolerable Impression Technique

(Continued from page 261)

5. The remainder of the periphery is treated in the same manner: successively tracing on one side from tuberosity to molars, then from molars to cuspid; repeating this on the other side; and finally tracing from cuspid to cuspid on the anterior. The impression is inserted in the patient's mouth after each tracing, and the patient is asked to repeat the sounds "oh" and "ee" in rhythm.

6. Complete the green tracing on the posterior, tracing the compound about $\frac{1}{4}$ inch wide and joining the previously traced green area at the heels. Flame, temper, and insert into the mouth. Holding the patient's nostrils, have the patient blow through the nose; this forces the soft palate down, defining the outline more clearly.

7. The subject of postdamming is extremely important. The tipping force

at the central incisors that is necessary to dislodge the denture is proportional to the seal obtained at the postdam area. The farther back on the soft palate that a contacting postdam can be brought, the greater will be the resistance to tipping. Explain this to the patient and he will willingly permit this extension.

8. Not all soft palates are alike. Where the soft palate hangs down like a curtain abruptly after leaving the hard area, extension should not be made far back. If this is done, the movement of the soft palate (such as in saying "ah") will leave voids about which the patient will soon complain. Pronouncing the letter K then becomes difficult. In case of such a short palate, the postdam edge must be deepened on the model by scratching it with a scraper just past the juncture of the hard and soft areas.

9. Carding wax or Kerr's plastic wax is painted over the green compound, the flame is played lightly upon the wax, the posterior of the impression is tempered in hot water, and the impression is inserted into the mouth. The tendency should be to overextend the length in this area at this stage in taking the impression.

10. After the denture is processed, it is trimmed by observation in the mouth. If when the patient says "ah" a space appears between the denture border and the tissue, the denture is trimmed until this is corrected.

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EDITOR'S NOTE: Correction: In the article by Doctor Moses in the March issue, page 140, the third sentence in the third paragraph in the third column should read: "For example, if the lower six anterior teeth have been extracted recently, and results in a Class III-B, broad-crested, parallel-walled ridge, a great amount of retention can be expected in that area."

The Use of the Desiccating Current in Treating Buccal Gingival Caries

WILLIAM I. OGUS, D.D.S., Washington, D. C.

In this issue of the DIGEST, Doctor Ogus discusses the use of the desiccating current in the treatment of caries of the buccal gingival margin of bicuspid and molars.

The technique for treatment of the root canal by the monopolar, monoterminial desiccation current was described in last month's (April) issue.

BUCCAL gingival caries of the bicuspid and molars has been a problem difficult to solve in many cases. The condition usually involves the enamel-cementum juncture.

Former Treatment

In the past, cavity preparation for caries in this area was done by traumatizing the gingival tissues, and the restoration was placed under the free gingival margin. The gingivae with pericemental fibers destroyed by this method remained red and inflamed. The pocket thus formed eventually led to continued pericemental fiber destruction and pocket formation.

In some cases there was a natural recession and retraction of tissue, and it was noted that in those cases the restorations were more successful. This was more prevalent in the cases in which the restorations had been placed when the patient was young, and in which the recession was noted in later life.

It is also noted that in many cases in which the free gingival margin covers the restoration but remains infected, the restoration begins to "leak," caries progresses, and in many

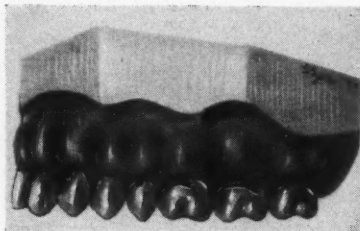


Fig. 1—Typical clinical appearance of buccal gingival caries.

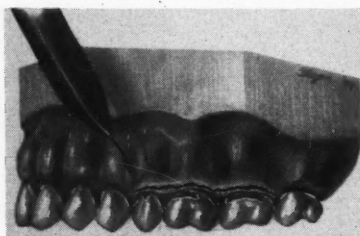


Fig. 2—Soft tissue being removed by means of the monopolar, monoterminial desiccation current.

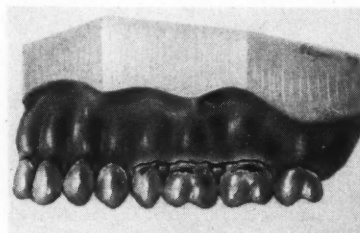


Fig. 3—Appearance of the tissues after tissue has been removed with the desiccation current.

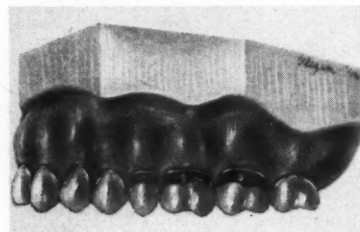


Fig. 4—Finished restorations in position. The metal does not impinge on the soft tissues.

instances pulp involvement takes place which cannot be demonstrated by roentgenographic studies.

Electric Desiccation

1. By the use of the desiccating current (monopolar), sufficient tissue that has lost its attachment to the cementum by destruction of the pericemental fibers can be removed. This technique, which coagulates and sterilizes at one time, prevents pocket formation and eliminates the possibility of infection or irritation because any remaining tissue maintains firm attachment with the pericemental fibers.

2. By virtue of the dry slough created by this current, the cavity can be prepared during the same appointment. If an inlay is to be inserted, the temporary filling placed into the cavity does not injure nor irritate the tissue. When the inlay is placed, it does not contact the soft tissue.

3. The cementum exposed by removing the soft tissue will be sensitive for a while, but unless we are dealing with a patient who has supersensitive cementum the restoration can be of permanent value.

4. Any sign of recurrence of caries can be noted easily on periodic examination, as can pulp involvement which is not noted in teeth with tissue-covered restorations.

5. This technique likewise can be employed in selected cases of erosion. It is noted, however, that in erosion in older patients there is a natural recession of the gingivae but rarely is pocket formation found.

1832 Eye Street, N.W.

The Editor's Page

AN ENTERPRISING piece of research was undertaken by the Canadian Dental Corps during the War.¹ This study made among a group of Air Force personnel was to determine the relationship between ascorbic acid intake and gingivitis. Among the 1400 apparently healthy young adults studied, approximately 20 per cent had gingivitis. The subjects were generally from a favorable economic group. Although gingivitis is probably not a disease entity, it is often a precursor to severe periodontal disease and loss of teeth. If gingivitis can be controlled it is natural to believe that some of the tissue changes that are grossly labeled as periodontal disease may be prevented. Inasmuch as periodontal disease is the cause of the greatest tooth loss in adult life, the prevention of gingivitis has wide public health implications. Among the group of young adults it was found that in few cases the daily intake of ascorbic acid was up to the 75 milligrams considered to be desirable for optimum nutrition.

In any study of gingival disease it is advantageous to have some objective methods of classifying the degree of inflammation observed. Normal gingival tone is: light pink without swelling or thickening; the interdental papillae are pointed and extend between the teeth; the margins are thin; the surface is stippled. Variations from normal were classified in the study as being of three grades:

Grade I Gingivitis: The tissue is slightly red and swollen. The papillae have lost their sharp points and have taken on a shininess.

Grade II Gingivitis: The redness and swelling have increased. Both the papillae and the marginal gingivae are involved.

Grade III Gingivitis: The swelling and redness are marked. There is a detachment of the tissue from the teeth, with pocket formation.

The Canadian investigators make these summarizing statements of their study:

1. When gingivitis was cleared to a maximum degree by local treatment (use of tissue displacement pack, scaling, and polishing), the provision of approximately 75 milligrams of ascorbic acid daily had a delaying effect on the recurrence of signs of inflammation over that which occurred when 10 milligrams of ascorbic acid daily was provided.

2. The results suggested that 75 milligrams of ascorbic acid retarded the recurrence of gingivitis to a greater degree than 25 milligrams daily.

3. The retarding effect on recurrence of gingivitis on a diet containing 75 milligrams of ascorbic acid was not significantly different from that of a diet containing 10 milligrams of ascorbic acid plus 75 milligrams of ascorbic acid in tablet form.

The authors make this significant comment: "The results here recorded show that gingivitis recurs after local treatment more frequently in individuals receiving a low ascorbic acid intake than in those receiving a high ascorbic acid intake. From this it would appear that it is advisable in the treatment of gingivitis that the local treatment be accompanied by dietetic treatment. Cognizance should be taken of this fact by the dentist in the treatment of his patients and dietary directions given to ensure that they constantly consume a diet adequate in all essential factors including the desired amount of ascorbic acid."

Although adequate ascorbic acid in its natural form is desirable for optimum health, it is encouraging to know that ascorbic acid in synthetic form is an effective substitute. Dentists should supplement their local treatment of soft tissue inflammation with supporting ascorbic acid therapy to ensure the minimum daily intake of 75 milligrams. In fact, it is well for the dentist to be constantly thinking in terms of supportive therapy in all his treatment procedures. In caries control, for example, it is not enough to suggest the prohibited foods. The dentist should be prepared to make positive suggestions indicating the desirable foods that should replace the prohibited ones.

¹Linghorne, W. J.; McIntosh, W. G.; Tice, J. W.; Tisdall, F. F.; McCreary, J. F.; Drake, T. G. H.; Greaves, A. V.; and Johnstone, W. M.: The Relation of Ascorbic Acid Intake to Gingivitis, *J. Canad. D.A.* 12:49-66 (February) 1946.

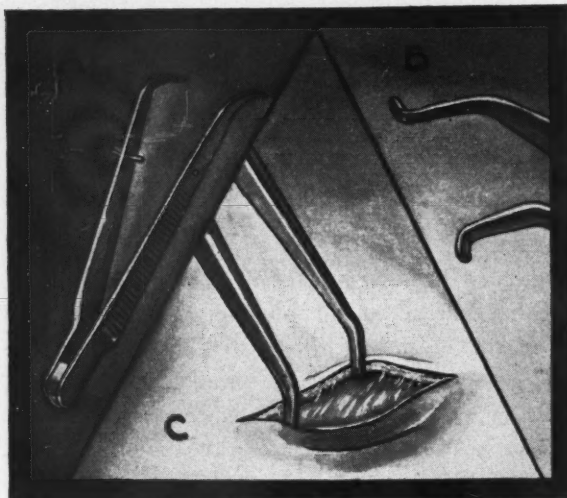


Fig. 1

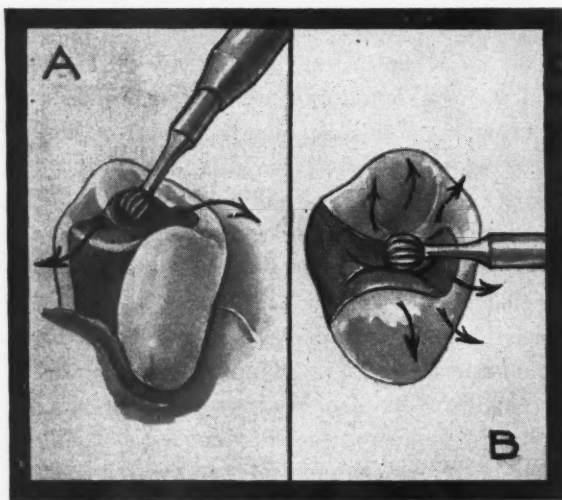


Fig. 2

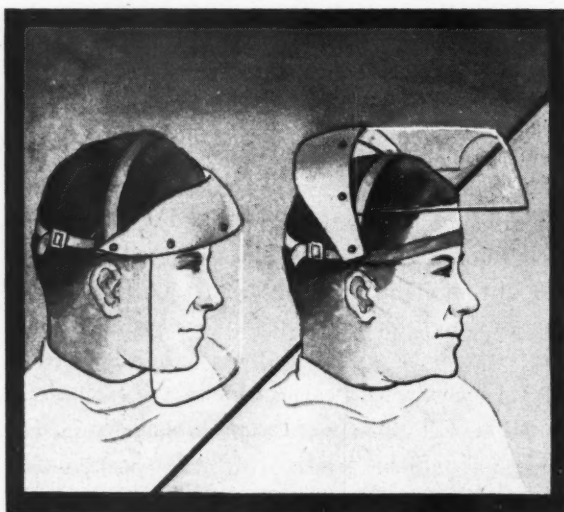


Fig. 3

A Long-Handled Tissue Retractor

Clement W. Linnert, D.D.S., Montgomery City, Missouri

Fig. 1—Select a pair of cotton pliers with a stiff spring action (A). Bend the points outward at right angles (B). The new beaks thus formed can be engaged in tissue to act as a retractor (C).

A Method of Burnishing Inlay Margins

Jerome M. Piekos, D.D.S., Chicago

Fig. 2—The advantages of adapting gold inlay margins to the tooth with a large (number 8), round bur, as indicated by the arrows in A and B, are: (1) closer adaptation of the margins to the tooth; (2) removal of feather edges and excess gold; (3) no destruction of tooth structure; (4) no scratching; and (5) useful in forward or reverse speeds.

A Protective Mask for the Operator

Leon Lieber, D.D.S., San Antonio, Texas

Fig. 3—For spraying mouths in cases of Vincent's infection or particularly messy prophylaxes, excellent protection for the operator is afforded by the use of a regular polisher's mask with a clear plastic front. It may be raised or lowered as desired. It is also useful when either the patient or the operator has a cold.

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A Method of Bleaching Discolored Teeth

Lieutenant H. J. Milligan (DC) USNR, Mare Island, California

Fig. 4—After a root canal has been filled, remove all the filling material in the coronal part of the tooth and extend the size of the cavity. Pack the cavity with dry sodium perborate, using an amalgam carrier and an amalgam condenser. Dampen the sodium perborate, and seal the opening with gutta-percha. Repeat the treatment every day or two until the desired result is obtained. Replace the cement base and the restoration.

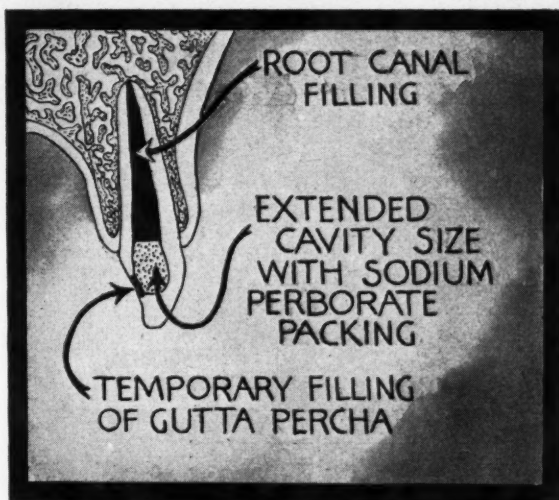


Fig. 4

A Protective Shield for Cutting Stones

Lieutenant (jg) Carl W. Elmquist (DC) USNR, Minneapolis

Fig. 5—To avoid cutting the tongue or cheeks during an operation when using a Joe Dandy disc, a protective shield is made as follows: A 1-inch bottle cap is cut in half (A) to fit over half the disc. A piece of metal is soldered to the cap (B), and is bent at the end to fit over the straight handpiece (C).

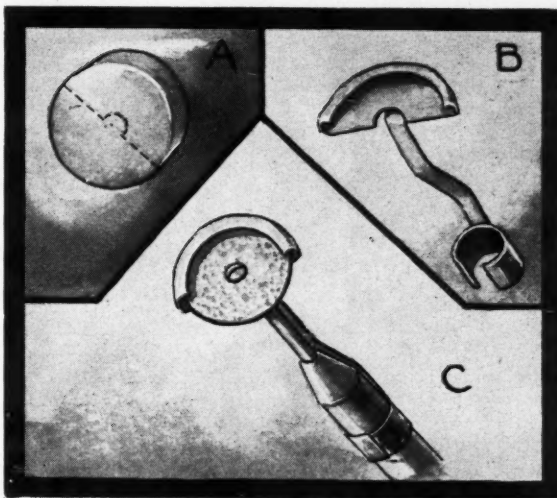


Fig. 5

A Copper Pickling Dish

Russell H. Kirk, D.D.S., Pittsburgh

Fig. 6—A copper ball float (A) from the water box of a toilet is made into two acid-pickling containers by opening the crimped seam that separates the halves. The two containers thus formed are excellent for pickling inlays or large castings (B).

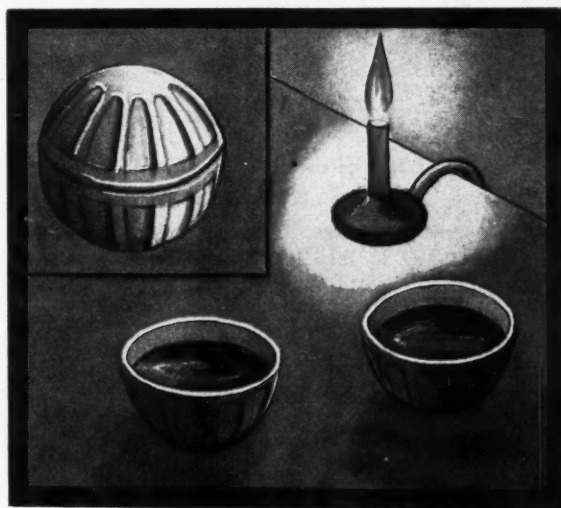


Fig. 6

technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time.

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That medical seer and prophet of the newsprints has returned to the Chicago field as a health columnist. He is giving out with his standard brand of misinformation concerning dentistry!

A perplexed inquirer who signs himself "C. G." has put this question to Brady: "The dentist who moved in on the practice of our own dentist (still in service) demands \$50 for an inlay such as our own dentist charged \$15 or \$20. My wife needs two teeth replaced by a bridge, and this profiteer quotes \$300. . . . What working person can afford this? Maybe this explains why a good many people neglect their teeth."

Brady's answer: "No, it doesn't. Trouble is that a good many people fall for the snooty pretensions of a good many dentists who use all the imposing tricks to make the patient feel a cheap skate if he or she properly objects to being gouged. But there are honest, competent, reliable dentists who take good care of the patient's needs and at a reasonable fee."

What's wrong with this answer? I would say, "Everything except the last sentence." Extremely few \$50 inlays are made. In some of the larger cities there are a few swanky dental offices where \$50 inlays are produced—and some of them are not too good, by the way. Nor are there many \$300 bridges made to replace two missing teeth. However, some of the big city, high-pressure producers, who cater to the social registrants and the country club set, turn out bridges at \$75 per tooth. I have seen some of them. There is nothing to distinguish them except the price.

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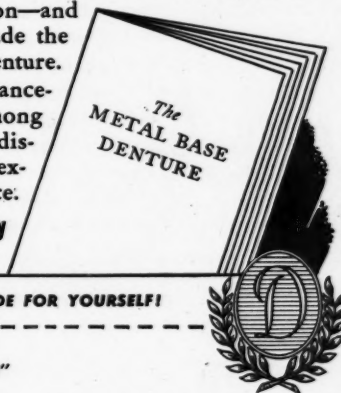
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Brady is also identified as the enemy of the toothbrush. He encourages the American people to discard their toothbrushes and to turn to chewing as the sole method of tooth cleaning. In another oracular outburst, Brady writes:

"Besides chewing other foods the chewing of salad greens, fresh raw vegetables (turnip, carrot, celery, potato, etc.) and fresh fruits, is the natural way to keep the teeth clean.

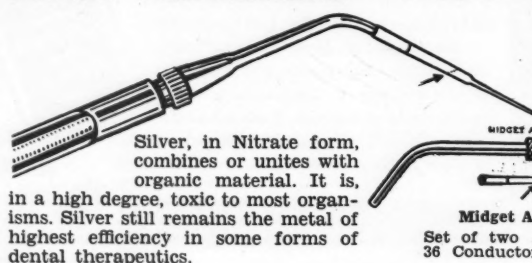
"Gnawing on gristle and bone keeps a dog's teeth clean—as clean as a hound's tooth. For children four years or older, the habit of chewing wheat—plain wheat—a handful every day, is fine for the teeth. The wheat makes better chewing than gum.

"Let me finish my dinner or lunch with some fruit and I'll pit my unbrushed teeth against the brushed teeth of any one of my age, for cleanliness."

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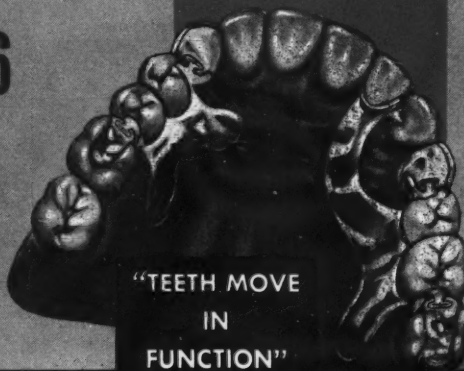
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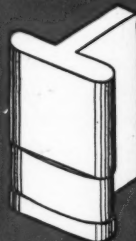
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climb a tree or conquer the wilderness or prairie with crude tools and the expenditure of physical energy. Modern Man, with the exception of those who make their living by hard physical labor, depends on sports and recreation for the functioning of his parts to keep them in physical tune. A game of golf is stimulating to tissues that are impoverished and underfunctioned in the ordinary living situations. Brushing the teeth is comparable. Brady would probably recommend tree climbing as a substitute for golf on the theory that it is a more primitive kind of activity. Chewing wheat, like a canary, will never be taken seriously as an oral hygienic procedure.

If Brady wants to go barefoot and with teeth unbrushed, that is his privilege. For my part, I'll take shoes and toothbrushing—slightly more civilized, I think.

Who's a Success?

According to Doctor Mandel Sherman of the University of Chicago, there are three qualities that make up success:

"1. You must be inwardly stimulated, from your own love of doing and creating, to achieve the maximum of which you are capable in your chosen field.

"2. You must not be upset emotionally by the competition from others. Your success as a person has no relation to the success or failure of anyone else.

"3. Your interest in what you are doing must stem, in equal measure, from the value of your work to society and its personal value to you."

Let's see what these tests mean as applied to dentists. Who is a successful dentist? The fellow with the largest bank account, with the largest number of dental society offices under his belt, the research worker, or the dental teacher? Or maybe the most successful chap is the unknown, unsung dentist over the corner drug-store.

According to Professor Sherman, to be successful one must feel inwardly that he has achieved the maximum of his capacities. That's a pretty stiff order. Very few of us ever ap-

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CONTRA-ANGLES

(Continued from page 280)

proach the point of using our capacities to the full. We are lazy, indifferent, scatter-witted, and suffer from mental inertia. Most of us could do a lot more than we do, so until we can answer truthfully to ourselves that we are living up to the maximum of our capacities and capabilities we cannot consider ourselves successful regardless of our bank accounts.

Professor Sherman's second category of success qualities warns us against being upset emotionally by others. I suppose he means that success is an individual evaluation and that it is not a comparative measure. This is good to remember because we are likely to think that the elevator operator, the plumber, the cab driver, are less successful than the big executive and professional people. But that isn't necessarily true. The big shot may be constantly annoyed and worm-eaten by jealousies, hostilities, fears, and anxieties. There are some psychiatrists who believe that the domineering, successful people are really that way because they feel insecure and hostile to their environments. If emotional stability is tied up with success, then we should say that the person with the greatest equanimity is the most successful. Equanimity does not mean people who are superficially calm but are writhing with tensions and inward aggressions. The people with emotions that are not being expressed, who are suffering from emotional short circuits, may be symbols of serenity but are in fact hunks of human dynamite ready to explode at any moment. By no test can they be called successful.

The third category in Professor Sherman's success-testing formula concerns the value of one's work to society and its value to himself. Significantly enough the value of work to society is given first mention, you will notice. The person, therefore, who undertakes work that makes other people more secure, more comfortable, healthier, and wiser, is a success provided he extends his efforts to his full capacity. One does not have to be a worker in the laboratory

searching for the cause of cancer, the writer of a moving novel, nor a great social planner. The ordinary artisan who tries to build a house, for example, that will be comfortable and homelike, the waitress who attempts to give service with a word of good cheer, the Pullman porter who understands the demands and distresses of his patrons—all have the opportunity to engage in activities of social value.

Now as far as the dentist is concerned: The one who attempts to see his patient as a whole, who attempts to see him as a total personality, who tries to think of his patient as a living organism faced with stresses and strains, anxieties and apprehensions, who sees his patient in projections of long-term significance—is the dentist who has the opportunity to be a success in terms of his value to society. On the other hand, the dentist who

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sees the patient as merely a space to be bridged, a denture to be made, or a tooth to be extracted—particularly if he sees the patient purely in dollar signs—can never expect to be a true success in dental practice. He is a merchant, a peddler, doing a service of no particular social significance. The next time we are hanging the label "success," or its antonym "failure," on any human being, let's not be too prompt to pass judgment. It

can well be that the person who appears so successful on the surface may be a miserable internal failure, and that the one with the ragged coat, living in obscurity, may be an eminently successful person.

It all boils down, it seems to me, to this: Success is an inner quality of the human spirit.

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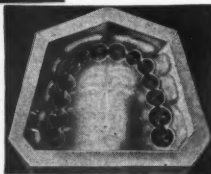
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CONTRA-ANGLES

(Continued from page 283)

cinnati Dental Society, other societies throughout the country have been making an effort to stimulate the interest of young people in dentistry as a career. Recently the Chicago Dental Society had a Youth Night. There were about five hundred in attendance. There were, unfortunately, more girls and boys present than dentists. It was a case of the guests outnumbering the hosts by a ratio of more than three to two.

The dour prophets tell us that unless more people enter dental colleges the time is not long distant when the demand will be so great and the supply so skimpy that the American people will be faced with a dearth in dental services. To prevent such a condition, we must go to strenuous efforts to encourage young people to study dentistry. I should like to feel that the people who are going into dentistry are doing it as a first choice rather than as the overflows and malcontents and the misplaced who can-

not enter medicine. Unfortunately, in the past many dental students have been frustrated medical students, or the medical failures. This is not wholesome. Any profession that is made up of second-rate people rather than first-rate people is bound to be an inferior profession. That kind of inferiority would express itself in inferior ethical standards, social concepts, and intellectual attainments. People have to be convinced that dentistry as a career in itself is pre-eminent.

It is notably hard to put the glamorizing touches to dentistry as a career. Life and death are not the issues as in much of medical practice. Dentistry does not have the glamor of the military career, of the judge sitting austere on the bench handing out justice, nor of the engineer who builds bridges to span rivers and ships and planes to cross land and sea. In the eyes of many people, dentistry is concerned with little things—pinpoint breaks in teeth, small tissues to be treated. That small-minded



EVIDENCE

Here is a prehistoric Chinese skull as reconstructed by the Museum of Natural History. Compare the bone structure of the marginal gum line in the ancient teeth with those found in your patients' mouths. Does not this tend to bear out the teaching of certain periodontists, that chewing coarse, unrefined foods by earlier peoples tended to prevent periodontal disease?

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attitude is not correct either on the part of the public or of dentists. It is true that the beginning cavity in the tooth, for example, is a small thing. So, too, I dare say, is the beginning of a cancerous growth or of any other disease. The ship or plane could not operate without the fine precision instruments which are, in effect, minute mechanisms comparable to small dental mechanical procedures. Proud Man himself is endangered by the tiny break in the continuity of tissue which is the portal of entry for the bacteria which may destroy him.

If we present dentistry to youth in its broad biologic and social implications, rather than in terms of the minuteness of its techniques, we should be able to encourage young people of imagination and intellect to enter the profession. So far as human disease is concerned, let us not forget that the disease processes that have killed the great men and the unknown men of the world had their beginnings in tiny lesions. The cancer that destroys sprang originally from a single sub-microscopic cell. The cardiac blood vessel that was occluded and caused a sudden death was first changed by a tiny break in the lining coat of the vessel. The life that was destroyed by cerebral hemorrhage was destroyed because an extremely small area of vital brain tissue underwent degenerative changes. *All* beginnings—including life itself—come from small things! We all can do our share in encouraging young people to enter the dental profession if we ourselves see dentistry in its broadest implications and in its total social significance.

Any dental society planning a Youth Night should invite Doctor Harold Hillenbrand, Editor of the *Journal of the American Dental Association*, to deliver the address. Harold has the skill to project statistics into life facts of interest to young people; he can dramatize dentistry without sentimentality. The success of the Youth Night depends so much on the keynote sounded in the address to young people. The program chairman should invite Doctor Hillenbrand who does the job so expertly.—E. J. R.



They're learning about DENTISTRY too!

—and *what* they are learning will, in a great measure, determine their future as dental patients. With many things to do in their young lives, the time required for dental treatment is likely to be given reluctantly. If their dental chair experiences have conditioned them to dread a dental appointment, this reluctance is increased manyfold. Like all humans, they don't like to be hurt. They are intelligent enough to cooperate with the dentist who makes dental treatment easy for them.

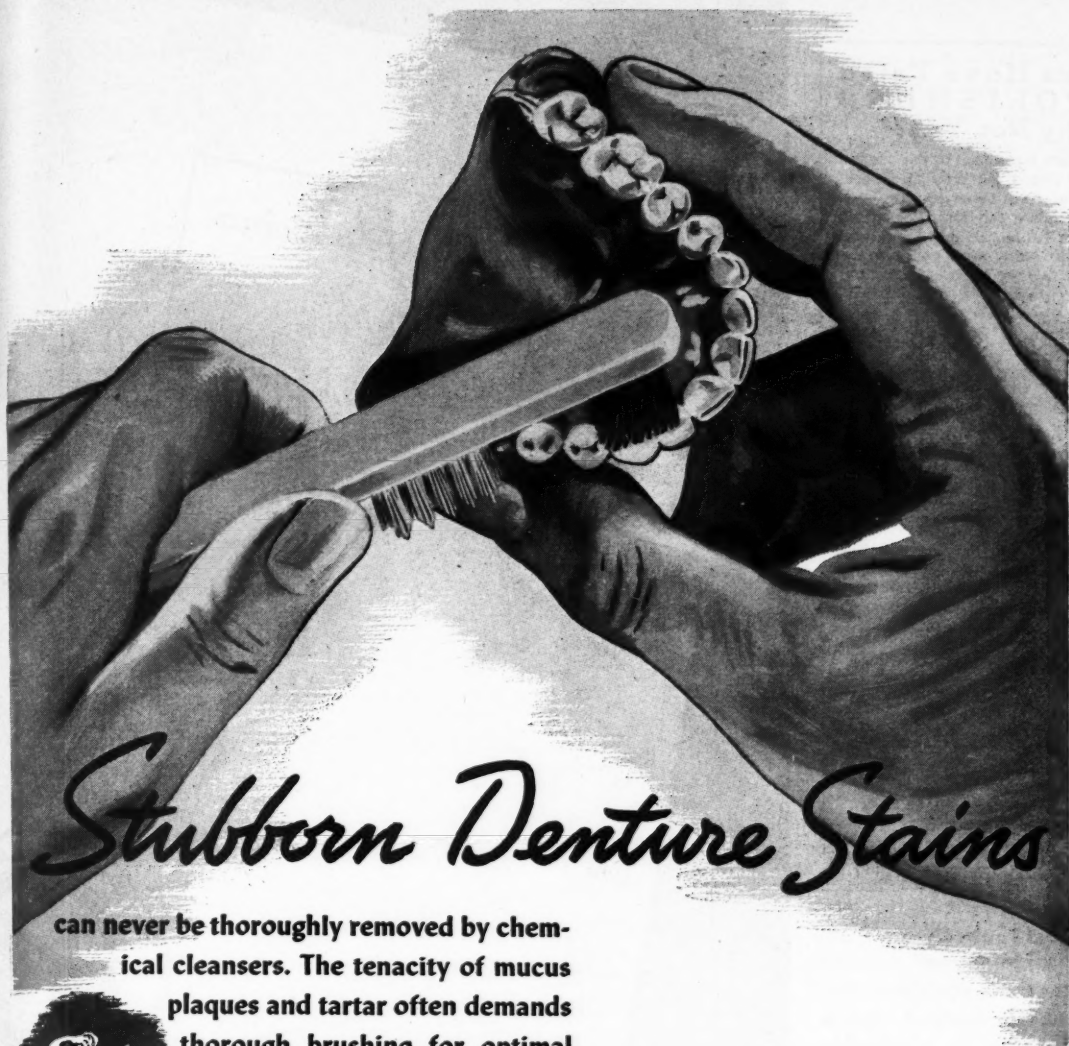
McKesson analgesia—the Euthesor or the Easor — builds youngster's goodwill and cooperation because it makes dental treatment easy for them. We shall be glad to tell you what McKesson analgesia is doing for other dentists — and what it *can* do for you.

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Is The Pulpless Tooth The Cause of Focal Infection?

(Continued from page 250)

That the pulpless tooth is not a "dead" tooth proves its relationship with the surrounding tissue not only through the blood supply but the lymph supply of the alveolodental periosteum.

2. Only when we can prove that the presence of micro-organisms in pulpless teeth produce a reaction—at least an inflammation—can we suppose that these infected teeth may be foci of infection and produce a systemic reaction in such a way that injury follows.

3. We have no clinical or laboratory test to say with precision whether a periapical infection or a granuloma is the direct cause of a systemic disease.

Diagnostic Possibilities

1. There is no evidence to prove by bacteriologic, histologic, or roentgenographic investigations that pulpless teeth are the origin of focal in-

fection. Clinical and roentgenographic studies have shown in several thousand cases:

a) No relationship between pulpless teeth and systemic diseases, and no improvement even after removal of dental foci of infection.

b) Pulpless teeth not associated with rheumatoid arthritis, nephritis, endocarditis, although chronic rarefying osteitis was present.

c) Teeth which originally had acute and chronic abscesses or granu-

lomas became negative after root treatment.

2. Only 14 per cent of 5000 patients with rheumatic conditions showed dental foci. In a few cases there was improvement after extraction of teeth; in the greater part, especially of chronic, long-standing contractures and deformities, there was not the slightest improvement.

3. Histologic examination has proved that pulpless teeth after successful root canal treatment are with-

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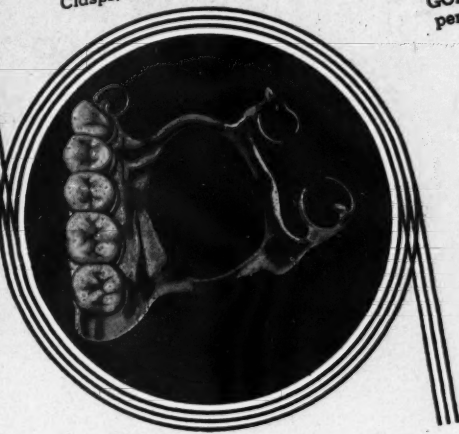


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out histologic evidence of infection in the periapical region; and that periapical restoration follows satisfactory root treatment of the pulpless teeth.

4. To prove focal infection caused by pulpless teeth by bacteriologic investigations is not quite satisfactory. Cultures from extracted teeth do not reflect the true bacteriologic status of pulpless teeth.

5. The leukocyte count may indicate an increase in the number of cir-

culating neutrophils and may at times be of diagnostic importance.

6. The sedimentation rate of the erythrocytes may also be a valuable aid in the diagnosis of infection. Abnormal sedimentation rate may be caused by infections, but abscessed teeth do not usually produce a rapid sedimentation rate.

All these investigations and tests should not be exaggerated as they are not always convincing in diagnosis, but it is evident that in cases of

suspected focal infection there should be a closer cooperation and understanding between internist and dentist. As the dentist is frequently able to save important teeth and stop infection by treatment, both should carefully consider the treatment, and in case of a necessary extraction the most appropriate time for the operation according to the illness of the patient.

Indiscriminate removal of infected teeth and the following blood stream infection may be dangerous to already infected organs. Acute rheumatism, for example, is an important contraindication for dental operations on account of the danger of bacterial endocarditis.

Treatment of Pulpless Teeth by Radioactive Substances

In the treatment of periodontal inflammations, root granulomas, and cysts, radioactive substances may be used as strong radiations by means of highly active preparations, or by means of weak radiations and emanations.

1. Strong radiations are of great value and give excellent results, apart from periodontal inflammations, in all cases of organic diseases which cannot be approached by operation. Radium therapy can considerably reduce the field of surgery under such conditions.

2. My method of treating inflammations of the periodontal membrane, which depends on the sterilizing and congestive action of the weak radiations of thorium, is of particular value to the dentist because he can apply the treatment himself. The treatment is directed toward finding a sterilizing and biologic working material which activates the failing resistance and raises the cellular protective reaction. My experiments regarding the biologic action of weak radiother radiations, and the histologic findings, enable us to draw the conclusion that in weak radiother radiations the clinician possesses a therapeutic means which can be regarded as the ideal choice for treatment of chronic inflammatory conditions of the teeth and surrounding tissues. —From *The Dental Record* 65:193-205 (September) 1945.

See page 233 D.D.5

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